"Pregnancy and Birth Survey," Fukushima Health Management Survey **Results (from FY2011 to FY2018)**

1 Purpose and Outline of the Survey

Fukushima Prefecture has been conducting the Pregnancy and Birth Survey every year since FY2011 with the aim of properly ascertaining mental and physical health conditions of pregnant women intending to give birth and raise children in Fukushima, and alleviating their worries and providing them with necessary care.

A high percentage of questionnaire respondents immediately after the earthquake showed depressive tendencies in particular and the number of mothers who were not confident about child rearing was apt to increase. Accordingly, a follow-up survey has been conducted every year since FY2015 targeting mothers who had no opportunity of receiving health checkups for four years after delivery, starting with mothers who responded to the questionnaire survey in FY2011.

2 Outline of the Implementation of the Survey and the Provision of Support

(1) Main survey

	Coverage:	Women who obtained a maternity handbook from municipalities in Fukushima
		Women who obtained a maternity handbook somewhere else but received prenatal
		checkups and gave birth in Fukushima
	Survey items:	Outcome of pregnancy and babies' health conditions
		Pregnant women's mental health conditions
		· Present living conditions (circumstances of a refugee life or forced separation from
		family members)
		Situation during delivery and pregnant women's physical health conditions
		Confidence in raising children
		Attitude toward the next pregnancy
	Survey method:	Questionnaire sheets are sent to the targeted pregnant women, asking them to fill in the
		sheets and send them back by post. The online response system was newly introduced
		in FY2016.
)	Follow-up surve	'Y
	C	D = 1 + 0.1 = 522011 + 522014

(2

Coverage:	Respondents of the FY2011 survey to FY2014 survey
Survey items:	Pregnant women's mental health conditions

- - · Confidence in raising children
 - · Worries over radiation effects
 - · Hospitalization of children
 - · Worries over children
- Survey method: Questionnaire sheets are sent to the targeted regnant women, asking them to fill in the sheets and send them back by post. The online response system was newly introduced in FY2016.

(3) Provision of support

Criteria for support

Women falling under A. or B. below:

- A. Women falling under two survey items relating to depression
- B. Women considered to be in need of support based on the content of free comments (statements in the free comment column or for other survey items)
 - e.g. A woman who entered a depressive comment; a woman in need of child-rearing support; a woman worrying about figures of radiation doses; a woman complaining of feeling ill; a woman seeking concrete answers; a woman requesting support, etc.

Support methods

- A. Check the content of responses to the questionnaire promptly and identify respondents who seem to be in need of help.
- B. Midwives and health nurses of the Radiation Medical Science Center for the Fukushima Health Management Survey provide counseling and support by phone sequentially.
- C. When any case requiring more specialized responses is found through support by phone, the case is referred to a specialized physician. For women for whom regional support is found to be necessary, requests are made to municipalities where they reside to ask for further responses.
- D. Consultations are accepted at the email address and the phone line dedicated for the Pregnancy and Birth Survey and support is provided accordingly.



Check the content of entries and make judgments regarding the necessity of support by phone

3 Survey Results

(1) Number of survey targets, number of responses, and response rate

For eight years, the response rate of the main survey was around 50%, showing a high level of people's interest. By area, immediately after the earthquake, the response rate was over 60% in the northern area of the prefecture and the Soso area, but the response rates showed no notable changes thereafter. The number of respondents once declined in FY2012 and recovered in FY2013, but was decreasing thereafter in the same manner as the trend of the number of births nationwide.

The response rate of the follow-up survey has been on a rise although being slightly lower than that of the main survey. By area as well, the response rates for the last two surveys were higher than before for all survey areas.

(Main survey)



[Number of survey targets, number of responses, and response rate]

[Reference] Current Population Survey, Vital Statistics



(Number and rate of births by year [against 1,000 persons], sex ratio and total fertility rate)



[Response rate by area]

(Follow-up survey)



[Number of survey targets, number of responses, and response rate]

(2) Responses to the questionnaire

A. Results of pregnancy (percentages of premature births and congenital abnormalities or anomalies)

The results of the Pregnancy and Birth Survey from FY2011 to FY2018 showed almost no differences from data of government statistics or other generally published data for each fiscal year. The percentages of congenital abnormalities or anomalies also showed no difference by area.

- * Percentage of premature births: The national average for FY2017 was 5.7%. (Premature births: Babies born at a gestational age from 22 weeks to less than 37 weeks)
- * The percentage of congenital abnormalities identifiable at the time of birth is generally 3% to 5% and the causes are diverse ("Guidelines for Obstetrical Practice in Japan: Obstetrics 2017").



[Percentage of premature births]







[Percentages of congenital abnormalities or anomalies by area (single birth)]

B. Mothers' mental health (percentage of depressive tendencies)

The number of mothers who responded affirmatively to both or either of the questions "Are you apt to feel depressed?" and "Are you uninterested in things?" was rather large in the earlier surveys but has been decreasing thereafter.

[Changes in mothers' depressive tendencies]



C. Care for pregnancy and delivery

The percentage of mothers unsatisfied with care for pregnancy and delivery has been small as a whole and is decreasing year by year.

Survey year	Percentage of responses "Unsatisfied" or "Completely unsatisfied"		
FY2011	No relevant questions contained		
FY2012	3.5%		
FY2013	2.3%		
FY2014	2.7%		
FY2015	2.4%		
FY2016	2.1%		
FY2017	1.7%		
FY2018	1.7%		

[Percentage of mothers unsatisfied with care for pregnancy and delivery]

D. Status of family life and child rearing (percentages of mothers living a refugee life and mothers not confident about child rearing)

- The percentage of mothers who responded that they are living a refugee life is decreasing year by year.
- The percentage of mothers who responded that they sometimes are not confident about child rearing has remained slightly less than 20% since immediately after the earthquake up until now.

[Percentage of mothe	rs living a re	efugee life]
6	0	0]

8	
Survey year	Percentage of responses that they are living a refugee life at present (including those living in temporary housing and those living in other types of housing)
FY2011	No relevant questions contained
FY2012	7.7%

FY2013	5.5%
FY2014	4.9%
FY2015	3.8%
FY2016	3.4%
FY2017	2.3%
FY2018	1.8%

[Percentage of mothers not confident about child rearing]

Survey year	Percentage of responses that they are not confident about child rearing		
FY2011	No relevant questions contained		
FY2012	15.4%		
FY2013	17.5%		
FY2014	16.6%		
FY2015	17.7%		
FY2016	16.6%		
FY2017	18.1%		
FY2018	17.7%		

E. Intention and request concerning next pregnancy and delivery

The percentage of mothers wishing to have another child has been constantly over 50% since the earthquake. Mothers who cited worries over radiation effects as a reason for not wishing to have another child accounted for less than 1% in the most recent survey.

L		
Survey year	Percentage of responses that they wish to have another child	Percentage of responses citing worries over radiation effects as a reason for not wishing to have another child
FY2011	No relevant questions contained	No relevant questions contained
FY2012	52.9%	14.8%
FY2013	52.8%	5.6%
FY2014	57.1%	3.9%
FY2015	53.3%	1.6%
FY2016	54.6%	1.2%
FY2017	52.4%	0.8%
FY2018	52.2%	0.5%

[Intention concerning next pregnancy and delivery]

F. Free comments (percentages of mothers entering free comments and mothers mentioning worries over radiation effects on fetuses and children, in particular)

The percentage of mothers who entered free comments on their worries over radiation effects on fetuses and children was nearly 30% immediately after the commencement of the survey but has been decreasing year by year to around 2% recently.

[Content of free comments]

-	-	
Survey year	Number of respondents who entered free comments (percentage)	Percentage of free comments regarding radiation effects on fetuses and children
FY2011	3,722 persons (42.2%)	29.6%

FY2012	1,481 persons (20.7%)	26.4%
FY2013	867 persons (12.0%)	12.9%
FY2014	745 persons (10.5%)	9.5%
FY2015	1,101 persons (15.7%)	5.2%
FY2016	965 persons (13.3%)	6.1%
FY2017	799 persons (12.4%)	4.8%
FY2018	881 persons (13.4%)	1.8%

(3) Results of support

A. Provision of support

For mothers, out of the respondents of the questionnaire, who were judged to be in need of consultations and support based on their responses, full-time midwives and health nurses provide consultations and support by phone or by email. The percentage of mothers in need of support identified based on their responses to questions regarding depressive tendencies in this survey has decreased by nearly 50% from the level immediately after the earthquake and the percentage identified through follow-up surveys has also been on a decline. Since FY2012, the coverage of support has been expanded to include those suspected to be in need of support from the content of their free comments and the percentage of those in need of support marked 10.7% in FY2018.

[Provision of support and the content thereof]

(Main survey)



									(cases)
		FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018
Number of mothers in need	Responses to questions regarding depressive tendencies	1,224	751	744	645	549	573	449	424
of support	Free comments	177	353	357	185	364	378	350	287
N	umber of spondents	9,316	7,181	7,260	7,132	7,031	7,326	6,449	6,649

*Mothers in need of support identified both based on their responses to questions regarding depressive tendencies and on their free comments are included in the category of those identified based on their responses to questions regarding depressive tendencies.





					(cases)
		Survey following up the FY2011 survey (conducted in FY2015)	Survey following up the FY2012 survey (conducted in FY2016)	Survey following up the FY2013 survey (conducted in FY2017)	Survey following up the FY2014 survey (conducted in FY2018)
Number of	Responses to questions regarding depressive tendencies	299	209	277	265
in need of	Free comments	76	47	51	31
support	Other statements	-	-	65	84
Number of respondents		2,554	2,021	2,706	2,719

*Mothers in need of support identified both based on their responses to questions regarding depressive tendencies and on their free comments are included in the category of those identified based on their responses to questions regarding depressive tendencies.

B. Topics of consultations

Through this survey, support by phone has been provided to nearly 1,000 mothers every fiscal year, but the number of targets has been decreasing recently. Details of the consultations have varied by fiscal year. Consultations on worries over radiation and its effects were most common immediately after the earthquake but have decreased over time. Since FY2012, consultations on mothers' mental and physical health and matters concerning child rearing (daily life) have been increasing and have become dominant.

In the follow-up survey, the number of consultations on mothers' mental and physical health has constantly been the largest since the commencement of the survey in FY2015 up to FY2018. Consultations on worries over radiation and its effects have been decreasing year by year.

,		,		,		,		,
	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018
	Worries over	Mothers' mental						
1st	effects	health						
	29.2%	33.4%	42.5%	49.5%	53.1%	59.8%	55.6%	53.2%
	Mothers' mental	Matters						
	and physical	concerning child						
2ns	health	rearing (daily						
		life)						
	20.2%	26.7%	38.7%	36.1%	40.9%	43.4%	51.8%	41.4%
	Matters	Worries over	Children's	Matters	Matters	Matters	Matters	Children's
	concerning child	radiation and its	mental and	concerning	concerning	concerning	concerning	mental and
3rd	rearing (daily	effects	physical health	family life	family life	family life	family life	physical health
	life)							
	14.0%	23.7%	20.3%	20.5%	21.8%	19.5%	16.4%	16.0%
	Children's	Children's	Matters	Children's	Children's	Children's	Children's	Matters
4th	mental and	mental and	concerning	mental and	mental and	mental and	mental and	concerning
401	physical health	physical health	family life	physical health	physical health	physical health	physical health	family life
	10.5%	13.4%	19.8%	14.5%	20.6%	18.0%	8.6%	9.3%
	Matters	Matters	Worries over					
5th	concerning a	concerning	radiation and its					
Jui	refugee life	family life	effects	effects	effects	effects	effects	effects
	9.3%	10.3%	17.1%	9.5%	5.9%	5.0%	4.1%	3.4%

[Topics of consultations by phone]

(Main survey)

A single person may have made multiple consultations.



[Consultations on worries over radiation and its effects]

(Follow-up survey)

	Survey following up the FY2011 survey (conducted in FY2015)	Survey following up the FY2012 survey (conducted in FY2016)	Survey following up the FY2013 survey (conducted in FY2017)	Survey following up the FY2014 survey (conducted in FY2018)
	Mothers' mental and physical			
1st	health	health	health	health
	34.4%	44.9%	36.0%	26.4%
	Worries over radiation and its	Matters concerning child rearing	Matters concerning child rearing	Matters concerning child rearing
2ns	effects	(daily life)	(daily life)	(daily life)
	25.6%	23.0%	27.7%	12.2%
	Matters concerning child rearing	Children's mental and physical	Matters concerning family life	Matters concerning family life
3rd	(daily life)	health		
	21.6%	22.7%	14.6%	6.4%
	Children's mental and physical	Worries over radiation and its	Worries over radiation and its	Worries over radiation and its
4th	health	effects	effects	effects
	18.1%	13.3%	13.1%	5.7%
	Matters concerning family life	Matters concerning family life	Children's mental and physical	Children's mental and physical
5th			health	health
-	13.9%	10.5%	9.8%	5.4%

* The method of inputting information (the form and person to input information) was altered from the survey following up the FY2013 survey.

C. Referral to other organizations

When an urgent need for referral to a municipal government is found based on responses to the questionnaire, such as deterioration in psychological symptoms, difficulties in child rearing, child neglect, abuse, or domestic violence, a request for support is made to a service office of the relevant municipality after consulting with a member of the Prefectural Oversight Committee responsible for the Pregnancy and Birth Survey and obtaining consent from the relevant mother concerning the referral to the service office.

					-	_		
	Municipal p	personnel in	Radiation consultation		Mental Health Support		Specialist physicians of the	
	charge of n	naternal and	office of the Fukushima		Team of the	e Fukushima	Fukushim	a Medical
Referred to	child	health	Medical University		Medical U	Jniversity	Univ	ersity
	M.:	Follow-up		Follow-up	M.:	Follow-up	M.:	Follow-up
	Main survey	survey	Main survey	survey	Main survey	survey Main survey		survey
FY2011	2	_	7	—	4	—	2	—
FY2012	6	_	1	—	14	—	0	—
FY2013	1	_	0	-	6	-	1	—
FY2014	3	_	0	_	1	_	0	_
FY2015	1	0	1	1	0	0	0	0
FY2016	8	0	0	0	5	0	0	0
FY2017	4	2	0	0	2	1	0	0
FY2018	3	0	0	0	3	3	1	0

[Number of referrals of mothers in need of support to other organizations]

[Procedures for making contact with other organizations (outside of the Pregnancy and Birth Survey Office)]



4 Publication of Survey Results and Feedback to Communities

- The latest survey results are made available on the website of the Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University.
- From FY2014 to FY2017, we held briefing sessions to explain survey results in five areas of the

prefecture (northern area, southern area, Soso area, Aizu area, and Iwaki area).

- Since FY2015, we have reported the outline of the survey results to health nurses, etc. at meetings of personnel in charge of maternal and child health of all municipalities held by the prefectural government.
- In FY2019, we directly visited 13 municipal liaison associations mainly in the Hamadori area and individually reported the survey results.
- We prepared a leaflet to outline the survey and explain the outcomes and sent copies thereof together with questionnaire sheets to all survey targets and also delivered them to municipalities and obstetrics and gynecology clinics and other medical institutions.
- On the occasions of the public symposium hosted by the Japan Medical Association and the "Iki Iki Kenko Zukuri Forum (Health and Fitness Forum)," we displayed a panel showing the survey results and delivered the leaflet.

5 Efforts for Raising Response Rates

- From the FY2016 main survey, the online response system was newly introduced for the convenience of respondents.
- In collaboration with municipalities, we posted requests for cooperation to the survey on municipal PR magazines.
- As the questionnaire contains questions concerning a health examination for one-month old babies, questionnaire sheets came to be delivered on three occasions considering mothers' due dates from the FY2014 survey so that mothers could respond to those questions on a timely basis.
- We reviewed and decreased the questions to alleviate respondents' burden.
- We sent a reminder or sent questionnaire sheets again to encourage those not responding to the questionnaire to send back responses.
- We conducted a survey to check the status of responses among the targets of the FY2014 survey.

We selected one municipality each from the Hamadori area, Nakadori area and Aizu area, and conducted a questionnaire survey with approximately 100 mothers who came to receive a health examination for three to four-month old babies (30 to 40 mothers per municipality) to obtain suggestions concerning survey methods.

6 Roles Having Been Played by the Survey

- (1) Present evidence to show that it is safe enough to get pregnant and give birth in Fukushima The survey clarified changes in the percentages of premature births and congenital abnormalities or anomalies in Fukushima over time and showed that those percentages were the same as figures of nationwide surveys and general standards, thereby presenting the safety of getting pregnant and giving birth in Fukushima.
- (2) Observe pregnant women and provide them with support through conducting the survey

The survey conducted every year has contributed to continuously observing pregnant women in

Fukushima and ascertaining their circumstances individually and has led to the provision of concrete support.

- (3) Provide support in an interactive manner
 - Targeting mothers who are judged to be in need of support based on the survey results (including those who cannot take actions by themselves), supporters have made phone calls to ascertain the current situation and provide support on a case-by-case basis. The survey results have been used to identify cases requiring individual visit support and to refer such cases to respective municipalities.
 - We prepared a dedicated phone line and email account to make it easier for anyone to make consultations and also established a service office to receive consultations from targeted mothers.
- (4) Build a system to provide support in collaboration with obstetrics and gynecology physicians and other organizations
 - We requested obstetrics and gynecology physicians and other organizations for the cooperation in delivering questionnaire sheets and referred mothers judged in need of specialized support to them, thereby promoting continued support for those mothers.
 - We visited the Japanese Midwives' Association and built a system for collaboration with regard to assistance with the main survey. The Association has been mainly introduced for mothers who experienced a stillbirth.
 - We have informed medical institutions of mothers' requests entered in questionnaire sheets via the Fukushima Society of Obstetrics and Gynecology and the Fukushima Association of Obstetricians and Gynecologists.
- (5) Closely collaborate with municipalities

We have referred mothers in need of urgent measures or continued support identified based on their responses to the questionnaire or the results of support by phone to responsible personnel of the respective municipalities and have provided support to those mothers in collaboration therewith.

- (6) Share the current status and challenges concerning maternal and child health (with the prefecture, municipalities, and related organizations)
 - Since FY2013, explanations have been provided directly by physicians at briefing sessions to explain survey results targeting health nurses, nurses, and related organizations in Fukushima and meetings hosted by the prefectural government (meetings of municipal personnel in charge of maternal and child health). For the FY2017 main survey, at the liaison association meetings of 13 municipalities in the Hamadori area, we explained the situation of each municipality and conducted opinion exchanges to share information.
 - Upon requests from municipalities, we provided survey results for the respective municipalities separately.
- (7) Respond to mothers' worries over radiation
 - After commencing the FY2011 main survey, we prepared a support book to help children and their guardians maintain their good mental and physical health and sent copies thereof to survey targets. From the next fiscal year, we sent the support book together with the questionnaire sheet to each of the survey targets (until the FY2013 main survey).
 - Starting with the FY2014 main survey, we prepared a leaflet to outline the survey and explain the outcomes and sent copies thereof together with questionnaire sheets.
- (8) Provide support to supporters

In order to further enhance qualities of supporters to enable them to properly respond to survey targets' worries and questions, we have encouraged them to acquire specialized knowledge and conduct case studies, and have provided them with training concerning knowledge on radiation and the thyroid gland, thereby promoting their appropriate responses to wide-ranging consultations.

(9) Noteworthy outcomes

- We have been able to maintain high response rates. There were criticisms concerning the survey, but there were also words of thanks and encouraging remarks. We have simplified questions and introduced an online method and have secured enough space for free comments since the first survey. Additionally, we have provided support by phone or by email. All these efforts are considered to have contributed to gaining people's approval for the survey.
- The percentages of stillbirths, premature births, low birth-weight babies, and congenital abnormalities or anomalies in Fukushima were found to be at the same levels as the national averages. Negative impacts were apt to attract attention immediately after the earthquake, but the survey results have also presented positive aspects.
- We have visited respective areas in Fukushima to directly explain survey results to responsible municipal personnel and this has raised people's interest in the survey and has enabled us to smoothly provide support to those in need of help in collaboration with municipalities. We received the following comments from municipal personnel in charge of maternal and child health who participated in briefing sessions: "I understand the current status of Fukushima Prefecture. It was very helpful." "Today's explanations will serve as useful information when I respond to consultations concerning child rearing by phone or at the time of a health examination and visit support."

Summary

1 The percentages of stillbirths (0.25%), premature births (4.4%), low birth-weight babies (8.7%), and congenital anomalies (2.72%) were almost the same as the national averages of those percentages in Japan.

Pregnancy and Birth Survey after the Great East Japan Earthquake and Fukushima Daiichi Nuclear Power Plant Accident in Fukushima Prefecture Fujimori K, et al. Fukushima J Med Sci. 2014;60(1):75-81.

2 Survey targets found positive for depression accounted for 28% throughout the prefecture. The percentage was high for mothers in the Soso area and those who changed obstetric care facilities, but was low for mothers in the Iwaki and Aizu areas.

Immediate effects of the Fukushima nuclear power plant disaster on depressive symptoms among mothers with infants: A prefectural-wide cross-sectional study from the Fukushima Health Management Survey

Goto A, et al. BMC Psychiatry. 2015 Mar 26;15:59.

3 In Fukushima, depressive symptoms were observed more frequently among mothers who experienced a miscarriage or stillbirth than among those who had a live birth.

IMMEDIATE MENTAL CONSEQUENCES OF THE GREAT EAST JAPAN EARTHQUAKE AND FUKUSHIMA NUCLEAR POWER PLANT ACCIDENT ON MOTHERS EXPERIENCING MISCARRIAGE, ABORTION, AND STILLBIRTH: THE FUKUSHIMA HEALTH MANAGEMENT SURVEY

Komiya H, et al. Fukushima J Med Sci. 2015;61(1):66-71.

4 Changes of obstetric care facilities due to medical reasons often result in premature births. However, no association was observed between premature births and changes of obstetric care facilities by mothers by themselves.

Effect of medical institution change on gestational duration after the Great East Japan Earthquake: The Fukushima Health Management Survey Suzuki K, et al. J Obstet Gynaecol Res. 2016 Dec;42(12):1704-1711.

5 No influence of the earthquake was observed in the growth of one month-old babies. In the Soso area, the percentage of mothers using powdered milk showed an increasing trend over time after the earthquake.

Impact of the Great East Japan Earthquake on feeding methods and newborn growth at 1 month postpartum: results from the Fukushima Health Management Survey. Kyozuka H, et al. Radiat Environ Biophys. 2016 May;55(2):139-46.

6 A significantly larger percentage of mothers who used to live in the evacuation areas and who could not receive prenatal checkups as scheduled used powdered milk due to worries over radioactive contamination.

Factors Associated with Infant Feeding Methods after the Nuclear Power Plant Accident in Fukushima: Data from the Pregnancy and Birth Survey for the Fiscal Year 2011 Fukushima Health Management Survey.

Ishii K, et al. Matern Child Health J. 2016 Aug; 20(8):1704-12.

7 Women who became pregnant within six months after the earthquake showed higher percentages of premature births and low birth-weight babies, and cases of respiratory diseases and mental disorders increased.

Obstetric outcomes in women in Fukushima prefecture during and after the Great East Japan Earthquake and Fukushima nuclear power plant accident: The Fukushima Health Management Survey

Hayashi M, et al. Open Journal of Obstetrics and Gynecology, 2016, 6, 705-713

8 A significantly larger percentage of mothers who were forced to change prenatal checkups and obstetric care facilities, those with high-risk pregnancy, those who had a Caesarean, and those who gave birth to their first babies are receiving support by phone. They use powdered milk more often

than those who do not receive support, worrying about radiation effects.

Characteristics of Mothers in Need of Support by Phone after the Tokyo Electric Power Company's Fukushima Daiichi Nuclear Power Station and the Details of Consultations – Based on the Pregnancy and Birth Survey, Fukushima Health Management Survey in FY2011 – Kayoko Ishii, et al., Japan Society of Maternal Health (2016)

9 Mothers whose babies were SGA (small-for-gestational-age) accounted for 5.6%. Areas where they lived at the time of the accident at the NPS and the timing of getting pregnant did not exert any influence on the occurrence of SGA.

Influence of the Great East Japan Earthquake and the Fukushima Daiichi Nuclear Disaster on the Birth Weight of Newborns in Fukushima Prefecture: Fukushima Health Management Survey. Yasuda S, et al. J Matern Fetal Neonatal Med. 2017 Dec;30(24):2900-2904

10 The use of ART temporarily decreased in Fukushima immediately after the Great East Japan Earthquake but no long-term influence of the earthquake has been observed.

Impact of the Great East Japan Earthquake and Fukushima nuclear power plant accident on assisted reproductive technology in Fukushima prefecture: The Fukushima Health Management Survey

Hayashi M, et al. J Clin Med Res. 2017 Sep;9(9):776-781.

1 1 A refugee life and worries over radiation were associated with depressive tendencies, but were not associated with a low confidence in child rearing.

The Fukushima Nuclear Accident Affected Mothers' Depression but Not Maternal Confidence. Goto A, et al. Asia Pac J Public Health. 2017 Mar;29(2 suppl):139S-150S.

1 2 The percentages of those aged 30 or older and those with depressive tendencies were higher among mothers who entered free comments in the questionnaire sheet than those who did not. Mothers' concerns shifted from radiation-related problems to their own mental and physical health.

Fukushima mothers' concerns and associated factors after the Fukushima nuclear power plant disaster: analysis of qualitative data from the Fukushima Health Management Survey 2011–2013 Ito S, et al. Asia Pac J Public Health. 2017 Mar;29(2_suppl):151S-160S.

1 3 Major research papers based on the results of the surveys for four years were compiled.

Pregnancy and Birth Survey of the Fukushima Health Management Survey: Review of four surveys conducted annually after the disaster Ishii K, et al. Asia Pac J Public Health. 2017 Mar; 29(2 suppl): 56S-62S. Review.

1 4 41.2% of the targeted mothers felt worries due to prejudice and discrimination and their such worries are especially associated with their age, whether they have depressive symptoms, whether they received prenatal checkups as scheduled, and whether they have developed any new diseases or symptoms after the earthquake.

Overview of the Pregnancy and Birth Survey section of the Fukushima Health Management Survey: Focusing on mother's anxieties toward radioactive exposure Ito S, et al. Journal of the National Institute of Public Health 2018 67 (1) 59-70

1 5 Mothers who used to live in the evacuation areas and those still living a refugee life are more likely to show depressive tendencies significantly. In particular, mothers who are living a refugee life separately from some of their family members and those who did not respond that they have good communications with their family members showed a higher percentage of having depressive tendencies.

Consideration of Refugee Life and Mental Health of Pregnant Women Caused by the Great East Japan Earthquake

Ota Misao, et al., Journal of the Japan Maternal and Infant Caring Association (2018)

1 6 Pregnant women who were in later pregnancy at the time of the earthquake showed increased risks of hypertensive disorders of pregnancy.

The effect of the Great East Japan Earthquake on Hypertensive Disorders during pregnancy: A study from the Fukushima Health Management Survey Kyozuka H, et al. J Matern Fetal Neonatal Med. 2019 Apr 1:1-6.

1 7 In the case of mothers having only one child, worries over radiation are associated with their reluctance to have another child.

Factors associated with intention of future pregnancy among women affected by the Fukushima Nuclear Accident: Analysis of Fukushima Health Management Survey Data from 2012 to 2014 Goto A, et al. J Epidemiol. 2019 Aug 5;29(8):308-314

18 By combining a paper survey and an online survey, the response rate has been raised. Respondents to the questionnaire in writing generally expressed their feelings and opinions more clearly.

Development and Implementation of an Internet Survey to Assess Community Health in the Face of a Health Crisis: Data from the Pregnancy and Birth Survey of the Fukushima Health Management Survey, 2016

Nakano H, et al. Int J Environ Res Public Health. 2019 Jun 1;16(11). pii: E1946.

Report on the Third-Round Thyroid Survey (Second Full-Scale Thyroid Survey)

1. Summary

1.1 Purpose

In order to monitor the long-term health of children, we are now engaged in the second Full-scale Thyroid Survey (the Third-Round Survey). The first round was Preliminary Baseline Survey for initial assessment of thyroid glands, and the second round was the First Full-Scale Thyroid Survey to assess any changes.

1.2 Survey Population

In addition to the participants of Preliminary Baseline Survey (Fukushima residents born between 2 April 1992 and 1 April 2011), the Full-Scale Thyroid Survey (from and after the Second-Round Survey) also includes those who were born between 2 April 2011 and 1 April 2012.

1.3 Implementation Period

The Second Full-Scale Survey started on 1 May 2016 and covered examinees up to age 20 on a municipalityby-municipality schedule to FY 2017. Thereafter, we revised the schedule of examinations so that examinees can take examinations every five years – at ages 25, 30, 35, etc. – to make it easier for examinees to remember when they are due for examination. However, the interval between the examination at age 25 and the previous one should not be greater than 5 years.

1.4 Responsible Organizations

Fukushima Prefecture commissioned Fukushima Medical University (FMU) to conduct the survey in cooperation with organizations inside and outside Fukushima for the convenience of examination participants (the number of contracts is as of 30 September 2019).

1.4-1 The primary examination	
Inside Fukushima Prefecture	82 medical facilities
Outside Fukushima Prefecture	121 medical facilities

1.4-2 The confirmatory examination	
------------------------------------	--

Inside Fukushima Prefecture	5 medical facilities including FMU
Outside Fukushima Prefecture	37 medical facilities

1.5 Method

1.5-1 The primary examination

We use ultrasonography for examination of the thyroid gland.

Assessments are made by specialists on the basis of the following criteria:

-Diagnostic criteria (A)

Those with A1 or A2 test results are recommended for watchful waiting until they undergo the primary examination, starting from April 2018.

A1: No nodules / cysts

A2: Nodules \leq 5.0 mm or cysts \leq 20.0 mm

-Diagnostic criteria (B)

Those with B test results are advised to take the confirmatory examination.

B: Nodules \geq 5.1 mm or cysts \geq 20.1 mm

Some A2 test results may be re-classified as B results when clinically indicated.

-Diagnostic criteria (C)

Those with C test results are advised to take the confirmatory examination.

C: Immediate need for confirmatory examination, judging from the condition of the thyroid gland.

1.5-2 The confirmatory examination

We conduct ultrasonography, blood test, urine test, and fine needle aspiration cytology (FNAC) if needed for those with B or C test results. Priority is given to those in urgent clinical need.

We recommend medical follow-up for those requiring it due to confirmatory test results.



1.5-3 Flow chart

1.6 Municipalities Surveyed

The municipalities where examinations were carried out in FY 2016 and FY 2017 are as follows:



25 municipalities surveyed in FY 2016
34 municipalities surveyed in FY 2017



Fig. 2 Municipalities Surveyed in FY2016 and FY2017

2. Results as of 30 September 2019

2.1 Results of the Primary Examination

2.1-1 Progress report

The primary examination started on 1 May 2016 for at 336,669 people in 59 municipalities (25 municipalities in FY2016 and 34 municipalities in FY2017) and so far carried out for 217,904 people (64.7%). (Examination status for each municipality and that of prefectures other than Fukushima are as in Appendix 1 and Appendix 2)

Results have been confirmed for 217,897 participants (100.0%) and notifications have been sent accordingly. (The result for each municipality is as Appendix 3)

Thus far, 76,420 (35.1%) were classified as A1, 139,976 (64.2%) as A2, 1,501 (0.7%) as B, and none as C.

Table 1 Progress a	and results o	f the primary example a first statement of the primary example a statement of the prim	nination				As of 30 S	eptember 2019
	Survey	Survey		Exam results				
	population	Proportion (%)	Outside	Proportion (%)		Class	(%) Requiring conf	irmetory eyem
	a	b (b/a)	Fukushima	c (c/b)	A1 d (d/c)	A2 e (e/c)	B f (f/c)	C g (g/c)
FY 2016	191,876	126,383 (65.9)	8,904	126,381 (100.0)	44,038 (34.8)	81,538 (64.5)	805 (0.6)	0 (0.0)
FY 2017	144,793	91,521 (63.2)	3,595	91,516 (100.0)	32,382 (35.4)	58,438 (63.9)	696 (0.8)	0 (0.0)
Total	336,669	217,904 (64.7)	12,499	217,897 (100.0)	76,420 (35.1)	139,976 (64.2)	1,501 (0.7)	0 (0.0)

As of 30 September 2019

Table 2. Number and proportion of participatns with nodules/cysts

	Number of	Number and proportion of participants with nodules/cysts						
	participants with	Nod	lules	Cysts				
	confirmed results	≥5.1 mm	≤5.0 mm	≥20.1 mm	≤20.0 mm			
	<u>a</u>	b (b/a)	c (c/a)	d (d/a)	e (e/a)			
FY 2016	126,381	805 (0.6)	429 (0.3)	0 (0.0)	81,923 (64.8)			
FY 2017	91,516	693 (0.8)	399 (0.4)	3 (0.0)	58,739 (64.2)			
Total	217,897	1,498 (0.7)	828 (0.4)	3 (0.0)	140,662 (64.6)			

Proportions are rounded to the 1st decimal place. This also applies to other tables.

The participants in FY2016 and FY 2017 surveys are those received the Full-Scale Survey examination conducted on a municipality-by-municipality basis (until they are older than 20 years old), whereas those who receive examination at 5year intervals (those born in FY1992 and FY1993) are excluded.

The results of those received examination at 5-year intervals will be shown separately. Examinations for those born in FY1992 (approx. 23,000) and FY1993 (approx. 22,000) took place in FY 2017 and FY2018, respectively.

2.1-2 Participation rates by age group

The participation rate of the age group of 18 or older (age as of 1 April 2016) in municipalities surveyed in FY 2016 was 17.2%.

The participation rate of the age group of 18 or older (age as of 1 April 2017) in municipalities surveyed in FY 2017 was 16.5%.

Table 3 Participation rates by age group

As of 30 September 2019

		Total		Age grou	ıp (years)	
	Age group (years)		4-7	8-12	13-17	18-23
	Survey population (a)	191,876	36,620	51,003	56,840	47,413
FY 2016	Participants (b)	126,383	26,425	45,553	46,267	8,138
	Proportion (%) (b/a)	65.9	72.2	89.3	81.4	17.2
	Age group (years)		5-7	8-12	13-17	18-24
	Survey population (a)	144,793	19,316	37,165	41,995	46,317
FY 2017	Participants (b)	91,521	14,957	33,947	34,966	7,651
	Proportion (%) (b/a)	63.2	77.4	91.3	83.3	16.5
	Survey population (a)	336,669	55,936	88,168	98,835	93,730
Total	Participants (b)	217,904	41,382	79,500	81,233	15,789
	Proportion (%) (b/a)	64.7	74.0	90.2	82.2	16.8

 $\cdot\,$ Age groups are formed with the age as of 1 April of each fiscal year.

2.1-3 Comparison of Full-scale Thyroid Surveys

Comparison of Third- and Second-Round Survey results is as shown in Table 4.

Among 201,519 participants who were diagnosed as A1 or A2 in the Second-Round Survey, 200,823 (99.7%) had A1 or A2 results, and 696 (0.3%) were diagnosed as B in the Third-Round Survey.

Among 1,147 participants who were diagnosed as B in the Second-Round Survey, 442 (38.5%) had A1 or A2 results, and 705 (61.5%) were diagnosed as B in the Third-Round Survey.

Table 4 Comparison of Full-scale Thyroid SurveyAs of							tember 2019		
	Results of the			Results of the Third-Round Survey *2					
			Second-round		A				
		Survey*1 (%) a	A1 b b/a (%)	A2 c c/a (%)	B d d/a (%)	C e e/a (%)			
		Δ1	79,748	57,633	21,979	136	0		
	А	AI	(100.0)	(72.3)	(27.6)	(0.2)	(0.0)		
		A2	121,771	12,174	109,037	560	0		
Description of			(100.0)	(10.0)	(89.5)	(0.5)	(0.0)		
Results of	D		1,147	62	380	705	0		
the Second-		Б	(100.0)	(5.4)	(33.1)	(61.5)	(0.0)		
Tould Survey		C	0	0	0	0	0		
		C	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)		
	N	manticipation	15,231	6,551	8,580	100	0		
	No participation		(100.0)	(43.0)	(56.3)	(0.7)	(0.0)		
	Tote ¹		217,897	76,420	139,976	1,501	0		
	Iotal		(100.0)	(35.1)	(64.2)	(0.7)	(0.0)		

*1 Upper figures show a previous (Second Round) diagnosis for the participants in this (Third Round) survey whose results have been confirmed. They are not the breakdown of the total number of the previous-round participants (270,557)

*2 Upper figures show the breakdown of the Third-Round Survey participants who were diagnosed for each diagnostic class in the Second-Round Survey. Lower figures are their proportion (%).

2.2 Results of the Confirmatory Examination

2.2-1 Progress report

Confirmatory Examinations have been conducted since October 2016 and so far 1,098 (73.2%) of 1,501 people who were recommended for a confirmatory examination as a result of the primary examination have received the examination and 1,050 (95.6%) have completed the entire procedure of the examination (Implementation status of each municipality is shown in Appendix 5).

Of the foregoing 1,050 participants, 108 (A1: 9, A2: 99) (10.3%) were confirmed to meet A1 or A2 diagnostic criteria by the Primary Examination standards (including those with other thyroid conditions). Remaining 942 (89.7%) people were confirmed to be non-equivalent to A1 or A2.

As of 30 September 2019

	Number of	Number of Participants		Confirmed exam results					
	confirmatory	Proportion (%)	Confirmatory exam coverage	A1	A2	Not A1 or A2			
	exam a	b (b/a)	(%) c (c/b)	d (d/c)	e (e/c)	f (f/c)	FNAC g (g/f)		
FY 2016	805	610 (75.8)	577 (94.6)	5 (0.9)	58 (10.1)	514 (89.1)	37 (7.2)		
FY 2017	696	488 (70.1)	473 (96.9)	4 (0.8)	41 (8.7)	428 (90.5)	37 (8.6)		
Total	1,501	1,098 (73.2)	1,050 (95.6)	9 (0.9)	99 (9.4)	942 (89.7)	74 (7.9)		

Table 5 Progress and results of the confirmatory examination

2.2-2 Results of fine needle aspiration cytology (FNAC)

Among those who underwent FNAC, 30 had nodules classified as malignant or suspicious for malignancy. 12 of them were male, and 18 were female. Participants' age at the time of the confirmatory examination ranged from 12 to 23 years (mean age: 16.4 ± 2.8 years). The minimum and maximum tumor diameters were 5.6 mm and 33.0 mm. Mean tumor diameter was 13.0 ± 6.5 mm.

Results of these 30 participants in the Full-Scale Survey (the Second-Round Survey) were: 20 were classified as A (A1: 6, A2: 14), 7 as B and 3 did not participated in the survey.

Table 6. Results of FNAC

A. Municipalities surveyed in FY 2016	
 Malignant or suspicious for malignancy : 	12 ^{*)}
• Male to female ratio :	6:6
• Mean age (SD, min-max):	16.3 (3.0, 12-23), 10.3 (2.8, 6-16) at the time of disaster
Mean tumor size:	14.0 mm (6.0 mm, 8.7-30.4 mm)
B. Municipalities surveyed in FY 2017	
 Malignant or suspicious for malignancy : 	18 ^{*)}
• Male to female ratio :	6:12
• Mean age (SD, min-max):	16.5 (2.7, 12-22), 9.4 (2.9, 5-16) at the time of disaster
Mean tumor size:	12.4 (6.9 mm, 5.6-33.0 mm)
C. Total	
 Malignant or suspicious for malignancy : 	30 ^{*)}
• Male to female ratio :	12:18
• Mean age (SD, min-max):	16.4 (2.8, 12-23), 9.8 (2.8, 5-16) at the time of disaster
Mean tumor size:	13.0 mm (6.5 mm, 5.6-33.0 mm)

*) Surgical cases are as shown in Appendix 6.

2.2-3 Age distribution of malignant or suspicious-for-malignancy cases diagnosed by FNAC Age distributions of 30 people having nodules classified as malignant or suspicious for malignancy by age as of 11 March 2011 is shown in Fig. 3, and by age as of the confirmatory examination in Fig. 4.



Fig.3 Age as of 11 March 2011



Fig.4 Age as of the date of confirmatory examination

2.2-4 Basic Survey results of those with nodules diagnosed as malignant or suspicious for malignancy by **FNAC**

11(36.7%) of the 30 people participated in the Basic Survey (for external radiation dose estimation), and 11 received the results. The highest effective dose documented was 1.5 mSv.

Table 7. A break	Cable 7. A breakdown of dose estimates for participants of the Basic SurveyAs of 30 September 2019											
				Age	e at the time	e of the disa	ster					
Effective dose	0.	-5	6-10		11-15		16-18		Total			
(1137)	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female		
<1	0	0	3	0	0	4	0	0	3	4		
1-1.9	0	0	1	1	1	1	0	0	2	2		
2-4.9	0	0	0	0	0	0	0	0	0	0		
5-9.9	0	0	0	0	0	0	0	0	0	0		
10-19.9	0	0	0	0	0	0	0	0	0	0		
≥20	0	0	0	0	0	0	0	0	0	0		
Total	0	0	4	1	1	5	0	0	5	6		

(Persons) 10 Male 9 □ Female 8 7 6 5 4 3 2 1 0 <1 1-1.9 2-4.9 5-9.9 10-19.9 ≥20 (mSv)

Fig. 5 Effective dose of the participants

2.2-5 Blood test and urinary iodine test results as of 30 September 2019

Table 8. Blood test re	Fable 8. Blood test results Mean±SD (Abnormal value)											
	FT4 ¹⁾ (ng/dL)	FT3 ²⁾ (pg/mL)	TSH ³⁾ (µIU/mL)	Tg ⁴⁾ (ng/mL)	TgAb 5) (IU/mL)	TPOAb ⁶⁾ (IU/mL)						
Reference Range	0.95-1.74 7)	2.13-4.07 7)	0.340-3.880 7)	≤33.7	<28.0	<16.0						
30 malignant or suspicious	1.2 <u>+</u> 0.1 (3.3%)	3.6 <u>+</u> 0.7 (16.7%)	1.8 <u>+</u> 1.2 (16.7%)	29.8 <u>+</u> 38.8 (26.7%)	20.0%	16.7%						
Other 989	1.2 <u>+</u> 0.2 (6.2%)	3.5 <u>+</u> 0.5 (6.3%)	1.3 <u>+</u> 4.4 (9.1%)	29.1 <u>+</u> 98.3 (14.4%)	8.2%	12.6%						

FT4: free thyroxine; thyroid hormone binding 4 iodines; higher among patients with thyrotoxicosis (such as Graves' disease) and 1) lower with hypothyroidism (such as Hashimoto's thyroiditis).

FT3: free triiodothyronine; thyroid hormone binding 3 iodines; higher among patients with thyrotoxicosis (such as Graves' disease) 2) and lower with hypothyroidism (such as Hashimoto's thyroiditis).

3) 4) TSH: thyroid-stimulating hormone; higher among patients with Hashimoto's disease and lower with Graves' disease.

Tg: thyroglobulin; higher when thyroid tissue is destroyed or when neoplastic tissue produces thyroglobulin.

5) TgAb: anti-thyroglobulin antibody; higher among patients with Hashimoto's disease and Graves' disease.

6) TPOAb: anti-thyroid peroxidase antibody; higher among patients with Hashimoto's disease or Graves' disease.

Reference interval varies according to age. 7)

Table 9 Urinary iodine test results

 $(\mu g/day)$

	Minimum	25th percentile	Median	75th percentile	Maximum
30 malignant or suspicious	69	144	229	397	3510
Other 991	26	109	176	324	8910

2.2-6 Confirmatory Examination results by area as of 30 September 2019

The proportions of participants with nodules diagnosed as malignant or suspicious for malignancy were 0.03% in Hamadori, 0.02% in 13 municipalities in the nationally designated evacuation zones and Aizu, and 0.01% in Nakadori.

Table 10 Confirmatory examination results by area

Area	Number of Participants a	Participants who required confirmatory exam b	Proportion who required confirmatory exam (%) b/a	Number who underwent confirmatory exam	Malignant or Suspicious cases c	Proportion of malignant or suspicious cases (%) c/a
13 municipalities ¹⁾	27,084	212	0.8	161	5	0.02
Nakadori ²⁾	121,916	761	0.6	564	8	0.01
Hamadori ³⁾	41,295	323	0.8	230	12	0.03
Aizu ⁴⁾	27,609	205	0.7	143	5	0.02
Total	217,904	1,501	0.7	1,098	30	0.01

¹⁾ Tamura, Minami-soma, Date, Kawamata, Hirono, Naraha, Tomioka, Kawauchi, Okuma, Futaba, Namie, Katsurao, Iitate

Fukushima, Koriyama, Shirakawa, Sukagawa, Nihonmatsu, Motomiya, Kori, Kunimi, Otama, Kagamiishi, Tenei, Nishigo, Izumizaki, Nakajima, Yabuki, Tanagura, Yamatsuri, Hanawa, Samegawa, Ishikawa, Tamakawa, Hirata, Asakawa, Furudono, Miharu, Ono

³⁾ Iwaki, Soma, Shinchi

⁴⁾ Aizuwakamatsu, Kitakata, Shimogo, Hinoemata, Tadami, Minami-aizu, Kitashiobara, Nishiaizu, Bandai, Inawashiro, Aizubange, Yugawa, Yanaizu, Mishima, Kaneyama, Showa, Aizumisato

2.3 Mental Health Care

2.3-1 Support for primary examination participants

Since July 2015, we offer person-to-person explanations to participants at public venues where primary examinations take place. After the examination, medical doctors explain the results showing the ultrasound image in private consultation booths set up at the venue. As of 30 September 2019, 27,853 (84.9%) of 32,806 participants visited the consultation booths. In case the booths cannot be set up at school, alternatives such as briefing sessions at schools and telephonic supports are offered.

* The number of those who used the consultation booths includes participants receiving the Second-Round Survey.

2.3-2 Support for confirmatory examination participants

We have set up a support team for participants of the confirmatory examination within Fukushima Medical University to address their anxiety and concerns, as well as online support for Q&A and counseling.

Since the start of the Full-Scale Thyroid Survey, 1,175 participants (413 males and 762 females) have received support as of 30 September 2019. The number of supports provided was 2,433 in total. Of these, 1,347 (55.4%) received support at their first examination and 1,020 (41.9%) at subsequent examination (includes 139 (5.7%) at FNAC) – and 66 (2.7%) at informed consent.

For those who have proceeded to the health insurance medical care, we continue to provide support in cooperation with the teams of medical staff at hospitals.

* The number of those who used the consultation booths at the confirmatory examination includes participants receiving the examination second time.

Thyroid ultraso	ound examin	nd examination (TUE) coverage by municipality					As of a	30 Septembe	er 2019	
	Survey population	Partici	pants	Proportion (%)	N	umber and p participants l	roportion ^{*2} o by age group	f	Participants living outside	Proportion (%)
	a	b	Fukushima*1	b/a	4-9	10-14	15-19	≥20	Fukushima	c/b
Municipalities su	rveyed in FY	2016		0/4	.,	10 11	10 15	-20	C	0,0
Kawamata	2.142	1.409	34	65.8	408	544	409	48	76	5.4
Tuvumuu	2,112	1,109		05.0	29.0	38.6	29.0	3.4		5.1
Namie	3,315	1,954	508	58.9	29.7	<u> </u>	29.5	133 6.8	586	30.0
litate	987	604	23	61.2	174	261	151	18	42	7.0
Minami-soma	11.540	7.076	1.236	61.3	2,208	2,726	1,839	303	1.333	18.8
	11,010	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1,200	0115	31.2	38.5	26.0	4.3	1,000	1010
Date	10,210	7,085	242	69.4	2,028	2,674	2,095	<u></u> 4.1	266	3.8
Tamura	6 344	4 055	99	63.9	1,269	1,594	1,105	87	186	4.6
Tumuru	0,511	1,055		05.9	31.3	39.3	27.3	2.1		
Hirono	975	546	66	56.0	29.9	33.9	28.2	44 8.1	61	11.2
Noroho	1 291	771	00	60.2	214	270	222	65	102	12.4
Indialla	1,201	//1	99	00.2	27.8	35.0	28.8	8.4	103	15.4
Tomioka	2,751	1,477	299	53.7	393	509	450	125	329	22.3
					26.6 47	34.5 72	30.5	8.5	· · · · · · · · · · · · · · · · · · ·	
Kawauchi	297	171	15	57.6	27.5	42.1	28.7	1.8	16	9.4
Okuma	2,259	1,343	270	59.5	418	496	349	80	300	22.3
					31.1	36.9 184	26.0	6.0		
Futaba	1,133	464	117	41.0	30.0	39.7	25.2	5.2	125	26.9
Katsurao	211	129	4	61.1	36	50	32	11	10	7.8
E 1 1	10.240	24.102	2 00 ((0.1	10,281	12,202	10,176	8.3 1,444	2,412	
Fukushima	49,340	34,103	2,096	69.1	30.1	35.8	29.8	4.2	2,412	7.1
Nihonmatsu	9,308	6,347	230	68.2	<u>1,955</u> 30.8	2,456	<u>1,747</u> 27.5	<u>189</u> 3.0	258	4.1
Motomiya	5 615	3 898	124	69.4	1,316	1,445	1,030	107	130	33
Witteninya	5,015	5,070	12-1	07.4	33.8	37.1	26.4	2.7	150	5.5
Otama	1,468	1,051	34	71.6	358	405	256	32	33	3.1
Variyana	50.460	29 115	2.951	64.1	11,583	14,398	10,610	1,524	2 0.91	0.1
Koriyama	59,469	38,115	2,851	04.1	30.4	37.8	27.8	4.0	3,081	8.1
Kori	1,854	1,354	39	73.0	424	<u>501</u> 37.0	370	59 4 4	38	2.8
Kunimi	1,405	1.021	31	72.7	275	385	304	57	32	3.1
	-,	-,			26.9	37.7	29.8	5.6		
Tenei	966	634	24	65.6	30.1	40.7	25.9	3.3	23	3.6
Shirakawa	11,352	7,648	295	67.4	2,261	2,853	2,251	283	373	4.9
Nishigo	3 722	2 562	110	68.8	787	951	705	119	142	5.5
Tusingo	5,722	2,302	110	00:0	30.7	37.1	27.5	4.6	142	5.5
Izumizaki	1,163	799	12	68.7	239	38.8	27.8	3.5	19	2.4
Miharu	2.769	1.767	46	63.8	454	628	595	90	44	2.5
	,	,			25.7 38.202	35.5	33.7	5.1		
Subtotal	191,876	126,383	8,904	65.9	30.2	37.2	28.5	4.1	10,018	7.9

*1) The number of participants who received the examination at facilities outside Fukushima or by teams dispatched from FMU (as of 31 August 2019)

*2) The upper layer shows the number of participants, and the lower layer shows the proportion of participants from each municipality.

*3) The number of participants who have resident registration outside of Fukushima.

• Age groups were formed based on the age at the Full-Scale Thyroid Survey (the Third-Round Survey). This applies to other tables hereafter.

-	-	-		-	-			As of	30 <u>Septemb</u>	er 2019
	Survey population	Partici	pants	Proportion	N	umber and p	proportion ^{*2} o	of	living outside	Proportion
	a	b	Fukushima*1	b/a	4-9	10-14	15-19	≥20	Fukushima	c/b
Municipalities a	surveyed in	FY 2017					I			
Iwaki	56,810	36,624	2,006	64.5	<u>8,793</u> 24.0	<u>13,724</u> 37.5	<u>11,600</u> 31.7	2,507 6.8	2,066	5.6
Sukagawa	14,113	9,247	275	65.5	2,570 27.8	<u>3,476</u> 37.6	2,699 29.2	502 5.4	305	3.3
Soma	6,252	3,822	256	61.1	<u>1,137</u> 29.7	1,410 36.9	<u>1,110</u> 29.0	165 4.3	291	7.6
Kagamiishi	2,417	1,590	44	65.8	<u>436</u> 27.4	<u>614</u> 38.6	470 29.6	70 4.4	46	2.9
Shinchi	1,320	849	34	64.3	212 25.0	<u>333</u> 39.2	<u>263</u> 31.0	41 4.8	48	5.7
Nakajima	972	645	6	66.4	<u>177</u> 27.4	240 37.2	202 31.3	26 4.0	8	1.2
Yabuki	3,041	1,962	43	64.5	<u>632</u> 32.2	736 37.5	519 26.5	75 3.8	49	2.5
Ishikawa	2,530	1,609	36	63.6	<u>485</u> 30.1	<u>591</u> 36.7	470 29.2	<u>63</u> 3.9	49	3.0
Yamatsuri	930	578	16	62.2	<u>187</u> 32.4	219 37.9	148 25.6	24 4.2	13	2.2
Asakawa	1,210	820	27	67.8	<u>214</u> 26.1	316 38.5	251 30.6	<u>39</u> 4.8	36	4.4
Hirata	1,101	691	8	62.8	208 30.1	268 38.8	196 28.4	<u>19</u> 2.7	11	1.6
Tanagura	2,749	1,752	42	63.7	536 30.6	677 38.6	479 27.3	60 3.4	54	3.1
Hanawa	1,492	889	27	59.6	260 29.2	<u>348</u> 39.1	<u>242</u> 27.2	<u>39</u> 4.4	35	3.9
Samegawa	617	382	12	61.9	120 31.4	154 40.3	<u>96</u> 25.1	12 3.1	17	4.5
Ono	1,716	1,031	21	60.1	<u>318</u> 30.8	<u>423</u> 41.0	<u> </u>	36 3.5	19	1.8
Tamakawa	1,210	798	10	66.0	222 27.8	<u>333</u> 41.7	220 27.6	23 2.9	12	1.5
Furudono	946	623	16	65.9	197 31.6	232 37.2	158 25.4	36 5.8	17	2.7
Hinoemata	94	47	5	50.0	<u>14</u> 29.8	<u>13</u> 27.7	<u>17</u> 36.2	<u>3</u> 6.4	4	8.5
Minami-aizu	2,512	1,472	25	58.6	<u>437</u> 29.7	<u>559</u> 38.0	<u>428</u> 29.1	48 3.3	25	1.7
Kaneyama	177	89	1	50.3	<u>19</u> 21.3	42 47.2	<u>25</u> 28.1	<u>3</u> 3.4	1	1.1
Showa	127	74	3	58.3	<u>26</u> 35.1	26 35.1	<u>20</u> 27.0	<u>2</u> 2.7	4	5.4
Mishima	174	107	1	61.5	<u>24</u> 22.4	<u>44</u> 41.1	<u> </u>	<u>2</u> 1.9	1	0.9
Shimogo	873	528	9	60.5	160 30.3	200 37.9	<u>148</u> 28.0	20 3.8	8	1.5
Kitakata	8,079	4,925	101	61.0	1,336 27.1	1,903 38.6	1,518 30.8	168 3.4	110	2.2
Nishiaizu	885	476	9	53.8	135 28.4	175 36.8	145 30.5	21 4.4	15	3.2
Tadami	642	391	7	60.9	<u>119</u> 30.4	<u>147</u> 37.6	<u>112</u> 28.6	<u>13</u> 3.3	5	1.3
Inawashiro	2,383	1,504	40	63.1	456 30.3	560 37.2	420 27.9	68 4.5	47	3.1
Bandai	555	355	9	64.0	105 29.6	143 40.3	98 27.6	9 2.5	13	3.7
Kitashiobara	502	318	7	63.3	<u>98</u> 30.8	129 40.6	79 24.8	<u>12</u> 3.8	7	2.2
Aizumisato	3,311	2,063	41	62.3	<u>568</u> 27.5	<u>832</u> 40.3	<u>563</u> 27.3	100	45	2.2
Aizubange	2,790	1,736	48	62.2	489 28.2	679 39.1	490 28.2	78 4.5	38	2.2
Yanaizu	538	342	4	63.6	<u>103</u> 30.1	<u>129</u> 37.7	96 28.1	<u>14</u> 4.1	3	0.9
Aizuwakamatsu	21,119	12,768	401	60.5	3,585	4,811 37.7	<u>3,915</u> 30.7	457	470	3.7
Yugawa	606	414	5	68.3	<u>121</u> 29.2	159 38.4	115 27.8	<u>19</u> 4.6	8	1.9
Subtotal	144,793	91,521	3,595	63.2	<u>24,499</u> 26.8	<u>34,645</u> 37.9	27,603 30.2	<u>4,774</u> 5.2	3,880	4.2
Total	336,669	217,904	12,499	64.7	<u>62,701</u> 28,8	81,666	<u>63,581</u> 29.2	9,956 4.6	13,898	6.4

Prefecture	Number of medeical facilities	Participants *	Prefecture	Number of medeical facilities	Participants *	Prefecture	Number of medeical facilities	Participants *
Hokkaido	7	355	Fukui	1	23	Hiroshima	2	33
Aomori	2	143	Yamanashi	2	105	Yamaguchi	1	22
Iwate	3	306	Nagano	3	139	Tokushima	1	9
Miyagi	2	2,546	Gifu	1	43	Kagawa	1	17
Akita	1	184	Shizuoka	2	112	Ehime	1	12
Yamagata	3	594	Aichi	4	223	Kochi	1	14
Ibaraki	4	770	Mie	1	25	Fukuoka	3	85
Tochigi	8	751	Shiga	1	22	Saga	1	5
Gunma	2	234	Kyoto	3	99	Nagasaki	2	27
Saitama	3	589	Osaka	7	232	Kumamoto	1	31
Chiba	5	547	Hyogo	2	138	Oita	1	14
Tokyo	16	2,137	Nara	2	30	Miyazaki	1	29
Kanagawa	6	1,034	Wakayama	1	6	Kagoshima	1	19
Niigata	2	590	Tottori	1	10	Okinawa	1	54
Toyama	2	23	Shimane	1	15			
Ishikawa	1	43	Okayama	3	60	Total	120	12,499

Thyroid ultrasound examination (TUE) coverage outside Fukushima by prefecture As of 31 August 2019

The number of participants includes those who received examination at facilities outside Fukushima or by teams dispatched • by Fukushima Medical University. The number of dispatches of FMU teams for examinations outside Fukushima was 1, to Kanagawa.

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Results of primary examination by municipality

		Contirmed	Number by exam results				NT 1	ulas	Create		
	Particinante	results		Proport	ion (%)		Nod	uies	Cysis		
	1 ar ucipants	Proportion		A			Proport	ion (%)	Proport	ion (%)	
		(%)	. 1		В	С	>5.1	(5.0	>20.1	<20.0	
	а	b/a (%)	Al	A2			∠3.1 mm	≥5.0 mm	∠20.1 mm	≥20.0 mm	
Municipalities surve	yed in FY 20	16									
TZ (1 400	1,409	490	910	9	0	9	7	0	915	
Kawamata	1,409	100.0	34.8	64.6	0.6	0.0	0.6	0.5	0.0	64.9	
Namia	1.054	1,954	652	1,286	16	0	16	9	0	1,289	
Namie	1,954	100.0	33.4	65.8	0.8	0.0	0.8	0.5	0.0	66.0	
Litata	604	604	203	397	4	0	4	2	0	397	
Intate	004	100.0	33.6	65.7	0.7	0.0	0.7	0.3	0.0	65.7	
Minomi como	7.076	7,076	2,568	4,455	53	0	53	32	0	4,477	
Iviinainii-soina	7,070	100.0	36.3	63.0	0.7	0.0	0.7	0.5	0.0	63.3	
Date	7.085	7,085	2,460	4,575	50	0	50	23	0	4,599	
Date	7,085	100.0	34.7	64.6	0.7	0.0	0.7	0.3	0.0	64.9	
Tamura	4 055	4,055	1,490	2,519	46	0	46	22	0	2,544	
Taillata	4,035	100.0	36.7	62.1	1.1	0.0	1.1	0.5	0.0	62.7	
Hirono	546	546	195	347	4	0	4	3	0	346	
1110110	510	100.0	35.7	63.6	0.7	0.0	0.7	0.5	0.0	63.4	
Naraha	771	771	293	475	3	0	3	2	0	476	
i tui uiitu	,,,1	100.0	38.0	61.6	0.4	0.0	0.4	0.3	0.0	61.7	
Tomioka	1 477	1,477	511	953	13	0	13	3	0	960	
1011110110		100.0	34.6	64.5	0.9	0.0	0.9	0.2	0.0	65.0	
Kawauchi	171	171	41	129	1	0	1	0	0	130	
		100.0	24.0	75.4	0.6	0.0	0.6	0.0	0.0	76.0	
Okuma	1.343	1,343	461	871	11	0	11	6	0	873	
	1,0.0	100.0	34.3	64.9	0.8	0.0	0.8	0.4	0.0	65.0	
Futaba	464	464	173	289	2	0	2	0	0	290	
		100.0	37.3	62.3	0.4	0.0	0.4	0.0	0.0	62.5	
Katsurao	129	129	50	79	0	0	0	1	0	79	
		100.0	38.8	61.2	0.0	0.0	0.0	0.8	0.0	61.2	
Fukushima	34,103	34,103	11,993	21,917	193	0	193	105	0	22,015	
	,	100.0	35.2	64.3	0.6	0.0	0.6	0.3	0.0	64.6	
Nihonmatsu	6.347	6,347	2,266	4,036	45	0	45	22	0	4,060	
		100.0	35.7	63.6	0.7	0.0	0.7	0.3	0.0	64.0	
Motomiya	3,898	3,898	1,357	2,524	17	0	17	8	0	2,535	
j	-,	100.0	34.8	64.8	0.4	0.0	0.4	0.2	0.0	65.0	
Otama	1.051	1,051	374	671	6	0	6	3	0	675	
	-,	100.0	35.6	63.8	0.6	0.0	0.6	0.3	0.0	64.2	
Koriyama	38,115	38,113	13,084	24,790	239	0	239	130	0	24,900	
5	, -	100.0	34.3	65.0	0.6	0.0	0.6	0.3	0.0	65.3	
Kori	1.354	1,354	493	851	10	0	10	4	0	858	
	-,	100.0	36.4	62.9	0.7	0.0	0.7	0.3	0.0	63.4	
Kunimi	1.021	1,021	340	673	8	0	8	2	0	678	
	-,	100.0	33.3	65.9	0.8	0.0	0.8	0.2	0.0	66.4	
Tenei	634	634	213	414	7	0	7	1	0	419	
		100.0	33.6	65.3	1.1	0.0	1.1	0.2	0.0	66.1	
Shirakawa	7.648	7,648	2,666	4,941	41	0	41	23	0	4,965	
	.,	100.0	34.9	64.6	0.5	0.0	0.5	0.3	0.0	64.9	
Nishigo	2,562	2,562	829	1,719	14	0	14	8	0	1,725	
8-	_,,-	100.0	32.4	67.1	0.5	0.0	0.5	0.3	0.0	67.3	
Izumizaki	799	799	272	525	2	0	2	5	0	525	
		100.0	34.0	65.7	0.3	0.0	0.3	0.6	0.0	65.7	
Miharu	1.767	1,767	564	1,192	11	0	11	8	0	1,193	
	,,	100.0	31.9	67.5	0.6	0.0	0.6	0.5	0.0	67.5	
Subtotal	126.383	126,381	44,038	81,538	805	0	805	429	0	81,923	
	0,000	100.0	34.8	64.5	0.6	0.0	0.6	0.3	0.0	64.8	

		Confirmed		Number by	exam results						
	Participants	results b		Propor	tion (%)		Noc	lules	Cy	/sts	
		Proportion	1	4	В	С	Propor	tion (%)	Propor	tion (%)	
	a	b/a (%)	Al	A2	5	Ū	≥5.1 mm	≤5.0 mm	≥20.1 mm	≤20.0 mm	
Municipalities surve	yed in FY 20	26 610	12 655	22 601	202	0	201	145		22 708	
Iwaki	36,624	100.0	12,655 34.6	<u>23,081</u> 64.7	<u>283</u> 0.8	0.0	0.8	0.4	0.0	<u>23,798</u> 65.0	
Sukagawa	9,247	<u>9,247</u>	3,236	<u>5,928</u> 64 1	83	0	83	46	0	<u>5,969</u> 64.6	
Soma	3 822	3,822	1,536	2,253	33	0.0	33	21	0.0	2,270	
Sona	5,022	100.0	40.2	58.9	0.9	0.0	0.9	0.5	0.0	59.4	
Kagamiishi	1,590	1,00.0	33.2	66.0	0.8	0.0	0.8	0.4	0.0	66.4	
Shinchi	849	849	<u>307</u> 36.2	<u>535</u> 63.0	<u>7</u> 0.8	0.0	<u>7</u> 0.8	<u>4</u> 0.5	0.0	<u>537</u> 63.3	
Nakajima	645	645	226	416	3	0	3	4	0	415	
Vabuki	1 962	1,962	683	1,271	0.3	0.0	0.3	4	0.0	1,274	
Tubuki	1,902	100.0	34.8	64.8 962	0.4	0.0	0.4	0.2	0.0	64.9 965	
Ishikawa	1,609	1,009	39.7	59.8	0.5	0.0	0.5	0.2	0.0	60.0	
Yamatsuri	578	<u> </u>	<u>196</u> 33.9	<u>379</u> 65.6	0.5	0.0	<u>3</u> 0.5	0.2	0.0	<u>381</u> 65.9	
Asakawa	820	820	292	519	9	0	9	3	0	525	
	(01	100.0 691	35.6	63.3	1.1	0.0	1.1	0.4	0.0	64.0	
Hirata	691	100.0	39.2	60.1	0.7	0.0	0.7	0.3	0.0	60.2	
Tanagura	1,752	1,732	36.2	63.2	0.6	0.0	0.6	0.5	0.0	63.6	
Hanawa	889	889	322	558	9	0	9	5	0	<u>561</u>	
Samegawa	382	382	139	239	4	0.0	4	3	0.0	241	
	1.021	100.0	36.4	62.6	1.0	0.0	1.0	0.8	0.0	63.1 718	
Ono	1,031	100.0	30.0	69.3	0.8	0.0	0.8	0.3	0.0	69.6	
Tamakawa	798	100.0	<u>285</u> 35.5	64.2	<u> </u>	0.0	0.4	0.8	0.0	64.3	
Furudono	623	623	238	<u>382</u> 61.3	<u>3</u> 0.5	0.0	3	2	0.0	<u>383</u> 61.5	
Hinoemata	47	47	21	26	0.0	0.0	0.0	0.5	0.0	26	
Minami aizu	1 472	1,472	<u>44.7</u> 552	55.3 909	0.0	0.0	0.0	0.0	0.0	<u> </u>	
Williami-aizu	1,472	100.0	37.5	61.8	0.7	0.0	0.7	0.2	0.0	62.0	
Kaneyama	89	100.0	34.8	64.0	1.1	0.0	1.1	1.1	0.0	64.0	
Showa	74	100.0	34 45.9	<u>38</u> 51.4	2.7	0.0	2.7	0.0	0.0	<u> </u>	
Mishima	107	107	28 26.2	78	1	0	1	1	0	79	
Shimogo	528	528	20.2	303	5	0.0	5	1	0.0	307	
	520	100.0	41.7	<u>57.4</u> 3.128	0.9	0.0	0.9	0.2	0.0	58.1	
Kitakata	4,925	100.0	35.8	63.5	0.7	0.0	0.7	0.5	0.0	63.7	
Nishiaizu	476	100.0	37.4	<u> </u>	<u>4</u> 0.8	0.0	<u> </u>	0.4	0.0	<u> </u>	
Tadami	391	391	144	245	2	0	2	1	0	247	
Inawashiro	1.504	1,504	526	963	15	0.0	15	0.3 7	0.0	974	
	1,501	100.0	35.0	64.0	1.0	0.0	1.0	0.5	0.0	64.8	
Bandaı	355	100.0	36.9	62.5	0.6	0.0	0.6	0.6	0.0	62.8	
Kitashiobara	318	<u> </u>	33.6	<u>209</u> 65.7	0.6	0.0	0.6	0.3	0.0	<u> </u>	
Aizumisato	2,063	2,063 100.0	769	<u>1,279</u> 62.0	<u>15</u> 07	0	<u>15</u> 07	12	0	1,285 62 3	
Aizubange	1,736	1,736	585	1,137	14	0.0	14	17	0.0	1,140	
Vanaizu	240	<u>100.0</u> <u>342</u>	<u>33.7</u> <u>123</u>	<u>65.5</u> <u>219</u>	0.8	0.0	0.8	1.0	0.0	<u>65.7</u> <u>219</u>	
i ailäizu	542	100.0	36.0 4 526	64.0 8 150	0.0	0.0	0.0	0.0	0.0	64.0 8 101	
Aizuwakamatsu	12,768	12,700	35.4	63.8	0.7	0.0	0.7	0.4	0.0	64.2	
Yugawa	414	414 100.0	<u>151</u> 36.5	<u>260</u> 62.8	<u>3</u> 0.7	0.0	<u>3</u> 0.7	2	0.0	<u>262</u> 63.3	
Subtotal	91,521	91,516	32,382	58,438	696	0	693	399	3	58,739	
L	I	100.0	35.4	63.9	0.8	0.0	0.8	0.4	0.0	64.2	
Total	217,904	<u>217,897</u> 100.0	76,420	<u>139,976</u> 64.2	<u>1,501</u> 0.7	0.0	<u>1,498</u> 0.7	828	<u>3</u> 0.0	140,662	

1 Thyroid ultras	nyroid ultrasound examination results by age and sex As of 30 September 2019														
Class/ sex			A	1			В				С		Total		
		A1			A2										
Age	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
4-9	13,887	12,061	25,948	18,338	18,383	36,721	17	12	29	0	0	0	32,242	30,456	62,698
10-14	13,268	11,055	24,323	28,284	28,707	56,991	110	242	352	0	0	0	41,662	40,004	81,666
15-19	11,697	10,532	22,229	19,838	20,687	40,525	286	541	827	0	0	0	31,821	31,760	63,581
≥20	1,772	2,148	3,920	2,470	3,269	5,739	83	210	293	0	0	0	4,325	5,627	9,952
Total	40,624	35,796	76,420	68,930	71,046	139,976	496	1,005	1,501	0	0	0	110,050	107,847	217,897

Results by age group (Male)



Results by age group (Female)



2 Nodule characteristics

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As of 30 September 2019
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Nadula aiza	Tatal			Class	Durantian	
Nodule size	Total	Male	Female	Class	Proportion	
None	215,571	109,262	106,309	A1	98.9%	
\leq 3.0 mm	71	34	37	۸ 2	0.4%	
3.1-5.0 mm	757	259	498	A2	0.470	
5.1-10.0 mm	968	329	639			
10.1-15.0 mm	334	111	223			
15.1-20.0 mm	111	27	84	В	0.7%	
20.1-25.0 mm	46	17	29			
≥ 25.1 mm	39	11	28			
Total	217,897	110,050	107,847			





3 Cyst characteristics

Crust size	Total			Class	Duonantion	
Cyst size	Totai	Male Female		Class	Proportion	
None	77,232	40,912	36,320	A1	75 50/	
\leq 3.0 mm	87,209	45,414	41,795		/3.370	
3.1-5.0 mm	47,361	21,602	25,759			
5.1-10.0 mm	5,984	2,091	3,893	A2	24 50/	
10.1-15.0 mm	96	25	71		24.370	
15.1-20.0 mm	12	5	7			
20.1-25.0 mm	2	0	2	р	0.0010/	
≥ 25.1 mm	1	1	0	В	0.001%	
Total	217,897	110,050	107,847			





Results of confirmatory	examination by area
Results of commutatory	

Results of conf	firmatory ex	amination b	ov area								As of 3	0 Septem	ber 2019
		Participants Number of those who underwent confirmatory exam						Number of confirmed results					
		who required										Not A!	or A2
Area	Participants	confirmatory exam	Total	Ages 4-9	Ages 10-14	Ages 15-19	≥ 20	Т	otal	A1	A2		FNAC
	а	b	с	d	e	f	g		h	i	i	k	1
		Proportion (%) b/a	Proportion (%) c/b	Proportion (%) d/c	Proportion (%) e/c	Proportion (%) f/c	Proportion (%) g/c	Propor	rtion (%) 1/C	Proportion (%) i/h	Proportion (%) j/h	Proportion (%) k/h	Proportion (%) 1/k
12	27.084	212	161	1	36	95	29		153	0	19	134	13
13 municipalities	27,084	0.8	75.9	0.6	22.4	59.0	18.0		95.0	0.0	12.4	87.6	9.7
NT 1 1 · 2)	121.016	761	564	14	111	317	122		536	5	45	486	31
Nakadori	121,910	0.6	74.1	2.5	19.7	56.2	21.6		95.0	0.9	8.4	90.7	6.4
TT 1 · 3)	41 205	323	230	2	53	115	60		224	2	23	199	21
Hamadori	41,295	0.8	71.2	0.9	23.0	50.0	26.1		97.4	0.9	10.5	88.8	10.6
4)	27.000	205	143	4	25	74	40		137	2	12	123	9
Aizu ¹⁷ 2	27,609	0.7	69.8	2.8	17.5	51.7	28.0		95.8	1.5	8.8	89.8	7.3
T-+-1	217.004	1,501	1,098	21	225	601	251		1,050	9	99	942	74
rotar	217,904	0.7	73.2	19	20.5	54.7	22.9		95.6	0.9	94	89.7	79

- Tamura, Minami-soma, Date, Kawamata, Hirono, Naraha, Tomioka, Kawauchi, Okuma, Futaba, Namie, Katsurao, Iitate 1)
- 2) Fukushima, Koriyama, Shirakawa, Sukagawa, Nihonmatsu, Motomiya, Kori, Kunimi, Otama, Kagamiishi, Tenei, Nishigo, Izumizaki, Nakajima, Yabuki, Tanagura, Yamatsuri, Hanawa, Samegawa, Ishikawa, Tamakawa, Hirata, Asakawa, Furudono, Miharu, Ono

3) Iwaki, Soma, Shinchi

4) Aizuwakamatsu, Kitakata, Shimogo, Hinoemata, Tadami, Minami-aizu, Kitashiobara, Nishiaizu, Bandai, Inawashiro, Aizubange, Yugawa, Yanaizu, Mishima, Kaneyama, Showa, Aizumisato

Appendix 6

Surgical cases for malignancy or suspicion of malignancy

1. Municipalities surveyed in FY 2016	
• Malignant or suspicious for malignancy:	12 (11 surgical cases: 11 papillary thyroid carcinomas)
2. Municipalities surveyed in FY 2017	
• Malignant or suspicious for malignancy:	18 (13surgical case: 13 papillary thyroid carcinomas)
3. Total	
• Malignant or suspicious for malignancy:	30 (24 surgical cases: 24 papillary thyroid carcinomas)

Report on the Fourth-Round Thyroid Survey (Third Full-Scale Thyroid Survey)

1. Summary

1.1 Purpose

In order to monitor the long-term health of children, we are now engaged in the third Full-Scale Thyroid Survey (the Fourth-Round Survey), following the Preliminary Baseline Survey for background assessment of thyroid glands, and two Full-Scale Thyroid Surveys (the Second- and Third-Round Surveys) to continuously confirm the status of thyroid glands.

1.2 Survey Population

All the Fukushima residents approximately 18 years old or younger at the time of earthquake (born between 2 April 1992 and 1 April 2012).

1.3 Implementation Period

From April 2018 (schedule of FY 2018 and FY 2019):

1.3-1 For those 18 years old or younger

The examination will be carried out for each municipality in FY 2018 and FY 2019.

1.3-2 19 years old or older

The examination will be carried out for each age (school grade).

FY 2018: those who were born in FY 1996 and FY 1998

FY 2019: those who were born in FY 1997 and FY 1999

1.3-3 For those 25 years old

For those who are older than 20, examination will be carried out with 5-year interval.

FY 2018: those who were born in FY 1993

FY 2019: those who were born in FY 1994

The results of these examinations will be reported separately.

1.4 Responsible Organizations

Fukushima Prefecture commissioned Fukushima Medical University (FMU) to conduct the survey in cooperation with organizations inside and outside Fukushima for the convenience of examination participants (the number of contracts is as of 30 September 2019).

1.4-1 The primary examination	
Inside Fukushima Prefecture	82 medical facilities
Outside Fukushima Prefecture	121 medical facilities

1.4-2 The confirmatory examination	
Inside Fukushima Prefecture	5 medical facilities including FMU
	27 1' 1 C '1'.'

1.5 Method

1.5-1 The primary examination

We use ultrasonography for examination of the thyroid gland.

Assessments are made by specialists on the basis of the following criteria:

-Diagnostic Criteria (A)

A1: No nodules / cysts

A2: Nodules \leq 5.0 mm or cysts \leq 20.0 mm

-Diagnostic Criteria (B)

B: Nodules $\geq 5.1 \text{ mm}$ or cysts $\geq 20.1 \text{ mm}$

Some A2 test results may be re-classified as B results when clinically indicated.

-Diagnostic Criteria (C)

C: Immediate need for confirmatory examination, judging from the condition of the thyroid gland.

1.5-2 The confirmatory examination

We conduct ultrasonography, blood test, urine test, and fine needle aspiration cytology (FNAC) if needed for those with B or C test results. Priority is given to those in urgent clinical need.

We recommend medical follow-up for those requiring it due to confirmatory exam results.

1.5-3 Flow chart



1.6 Municipalities Surveyed

The municipalities where examinations (for those 18 years old or younger) were carried out in FY 2018 and FY 2019 are as follows:



Fig.2 Municipalities surveyed in FY2018 and FY2019

2. Results as of 30 September 2019

2.1 Results of the Primary Examination

2.1-1 Progress report

The examination was carried out for 136,942 (46.5%) participants by 30 September 2019 (Implementation status for each municipality and prefectures other than Fukushima are shown in Appendix 1 and Appendix 2). Results of 125,491 participants (91.6%) have been confirmed and notifications were sent to them accordingly. (The result for each municipality is shown in Appendix 3).

Of these, 43,064 were classified as A1 (34.3%), 81,598 as A2 (65.0%), 829 (0.7%) as B, and none as C.

Table 1 Progress and results of the primary examinationAs of 30 September							mber 2019							
		I	Participa	nts			E	xam re	sults					
	Survey								Cla	uss (%)				
	population	Proportio	on (%)	Outside	Propor	Proportion (%)		Proportion (%)		A			Requiring confirmatory	
			<i>a</i> ()	Fukushima		()					D 4	exa	am	
	a	b	(b/a)		c	(c/b)	Ald	(d/c)	A2 e	(e/c)	BI	(f/c)	C g (g/c)	
FY 2018	168,021	103,315	(61.5)	6,547	101,803	(98.5)	34,808	(34.2)	66,394	(65.2)	601	(0.6)	0 (0.0)	
FY 2019	126,162	33,627	(26.7)	2,301	23,688	(70.4)	8,256	(34.9)	15,204	(64.2)	228	(1.0)	0 (0.0)	
Total	294,183	136,942	(46.5)	8,848	125,491	(91.6)	43,064	(34.3)	81,598	(65.0)	829	(0.7)	0 (0.0)	

Table 2. Number and proportion of participants with nodules/cysts

As of 30 September 2019

	Number of	Number and proportion of participants with nodules/cysts						
	participants with	Nod	lules	Cysts				
	confirmed results	≥5.1 mm	≤5.0 mm	≥20.1 mm	≤20.0 mm			
	a	b (b/a)	c (c/a)	d (d/a)	e (e/a)			
FY 2018	101,803	598 (0.6)	330 (0.3)	3 (0.0)	66,695 (65.5)			
FY 2019	23,688	228 (1.0)	106 (0.4)	0 (0.0)	15,328 (64.7)			
Total	125,491	826 (0.7)	436 (0.3)	3 (0.0)	82,023 (65.4)			

• Proportions are rounded at a lower decimal place. This applies to other tables as well.

• Those who receive the examination at 5-year intervals (those born between FY1992 and FY1995) are excluded. The results of examinations with 5-year intervals will be shown separately.

• The examination for those born in FY 1992 (approx. 22,000) and FY 1993 (approx. 22,000) took place in FY 2017 and FY 2018, respectively. Those born in FY 1994 (approx. 22,000) and FY 1995 (approx. 21,000) will be covered in FY 2019 and FY 2020 surveys, respectively.

2.1-2 Participation rates by age group

The participation rate for each age group as of 1 April of each year is shown in Table 3.

Table 3 Participation rates by age group

```
As of 30 September 2019
```

 $A = -f^{2}0$ Sentender 2010

		Total	P	Age group (years)
	Age group (years)		6-11	12-17	18-24
	Survey population (a)	168,021	56,927	64,829	46,265
FY 2018	Participants (b)	103,315	47,728	51,231	4,356
	Proportion (%) (b/a)	61.5	83.8	79.0	9.4
	Age group (years)		7-11	12-17	18-24
	Survey population (a)	126,162	34,159	47,276	44,727
FY 2019	Participants (b)	33,627	12,904	16,429	4,294
	Proportion (%) (b/a)	26.7	37.8	34.8	9.6
	Survey population (a)	294,183	91,086	112,105	90,992
Total	Participants (b)	136,942	60,632	67,660	8,650
	Proportion (%) (b/a)	46.5	66.6	60.4	9.5

• Age groups are formed with the age as of 1 April of each fiscal year.

2.1-3 Comparison of Full-scale Thyroid Surveys

Comparison of Fourth- and Third-Round Survey results is shown in Table 4. Among 111,234 participants who were diagnosed as A1 or A2 in the Third-Round Survey, 110,838 (99.6%) had A1 or A2 results, and 396 (0.4%) were diagnosed as B in the Fourth-Round Survey. Among 449 participants who were diagnosed as B in the Third-Round Survey, 88 (19.6%) had A1 or A2 results, and 361 (80.4%) were diagnosed as B in the Fourth-Round Survey.

Table 4 Comparison of Full-scale Thyroid Survey

Table 4 Comparison of Full-scale Thyroid Survey As of 50 September 2019								
Results of the Third-			Results of the Fourth-Round Survey ^{*2}					
			round Survey ^{*1}	1	4	D	C	
			(%)	Al	A2	Б	C	
			а	b	с	d	e	
				b/a (%)	c/a (%)	d/a (%)	e/a (%)	
		A 1	38,604	29,395	9,159	50	0	
		AI	(100.0)	(76.1)	(23.7)	(0.1)	(0.0)	
Results of the	A	42	72,630	7,931	64,353	346	0	
		A2	(100.0)	(10.9)	(88.6)	(0.5)	(0.0)	
	D	449	4	84	361	0		
Survey		D	(100.0)	(0.9)	(18.7)	(80.4)	(0.0)	
Burvey		C	0	0	0	0	0	
		C	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	
	N	manticipation	13,808	5,734	8,002	72	0	
No participation		(100.0)	(41.5)	(58.0)	(0.5)	(0.0)		
125,491		125,491	43,064	81,598	829	0		
	Total		(100.0)	(34.3)	(65.0)	(0.7)	(0.0)	

*1 Upper figures show a previous (Third-Round) diagnosis for the participants in this (Fourth-Round) survey whose results have been confirmed. They are not the breakdown of the total number of the previous-round participants (217,897).

*2 Upper figures show the breakdown of the Fourth-Round Survey participants who were diagnosed for each diagnostic class in the Third-Round Survey. Lower figures are their proportion (%).

2.2 Results of the Confirmatory Examination

2.2-1 Progress Report

By 30 September 2019, 484 of 829 people (58.4%) have received the examination. Of those, 418 (86.4%) have completed.

Of the foregoing 418 participants, 38 (A1: 2, A2: 36) (9.1%) was confirmed to meet A1 or A2 diagnostic criteria by the Primary Examination standards (including those with other thyroid conditions). Remaining 380 (90.9%) people were confirmed to be outside of A1/A2 criteria.

	Number of	Participants		Confirmed			
	those requiring confirmatory	Proportion (%)	Confirmatory exam coverage (%)	A1	A2	Not A1 or A2	
	exam						FNAC
	a	b (b/a)	c (c/b)	d (d/c)	e (e/c)	f (f/c)	g (g/f)
FY 2018	601	399 (66.4)	369 (92.5)	2 (0.5)	34 (9.2)	333 (90.2)	28 (8.4)
FY 2019	228	85 (37.3)	49 (57.6)	0 (0.0)	2 (4.1)	47 (95.9)	1 (2.1)
Total	829	484 (58.4)	418 (86.4)	2 (0.5)	36 (8.6)	380 (90.9)	29 (7.6)

Table 5 Progress	s and results	of the confirma	tory examination
------------------	---------------	-----------------	------------------

As of 30 September 2019

2.2-2 Results of fine needle aspiration cytology (FNAC)

Among those who underwent FNAC, 16 had nodules classified as malignant or suspicious for malignancy. 8 of them were male, and 8 were female. Participants' age at the time of the confirmatory examination ranged from 11 to 20 years (mean age: 16.1 ± 2.6 years). The minimum and maximum tumor diameters were 6.1 mm and 29.4 mm. Mean tumor diameter was 11.5 ± 5.7 mm.

13 of these 16 participants had A (A1: 3, A2: 10) and 3 had B in the Full-Scale Survey (Third-Round Survey).

Table 6. Results of FNAC

A. Municipalities surveyed in FY 2018	
 Malignant or suspicious for malignancy : 	15 ^{*)}
• Male to female ratio :	7:8
B. Municipalities surveyed in FY 2019	
 Malignant or suspicious for malignancy : 	1*)
• Male to female ratio :	1:0
C. Total	
 Malignant or suspicious for malignancy : 	16 ^{*)}
• Male to female ratio :	8:8
• Mean age (SD, min-max):	16.1 (2.6, 11-20), 8.3 (2.5, 4-12) at the time of disaster
Mean tumor size:	11.5 mm (5.7 mm, 6.1-29.4 mm)

*) Surgical cases are as shown in Appendix 6.

2.2-3 Age distribution of malignant or suspicious-for-malignancy cases diagnosed by FNACAge distributions of 16 people with nodules classified as malignant or suspicious with their age as of 11 March2011 is as Fig. 3, with their age as of confirmatory examination is as Fig. 4.



The horizontal axis begins at -1 to include residents of Fukushima Prefecture born between 2 April 2011 and 1 April 2012

Fig.3 Age as of 11 March 2011







2.2-4 Basic Survey results of those with nodules diagnosed as malignant or suspicious for malignancy by FNAC

11 (68.8%) of the 16 people who were diagnosed as malignant or suspicious cases by FNAC had participated in the Basic Survey (for external radiation dose estimation), and 11 received the results. The highest effective dose documented was 2.4 mSv.

Table 7. A blean	Cuowii of u	ose estimate	es for partic	ipants of th	e Dasic Sul	lvey		AS OI	50 Septen	1001 2019		
	Age at the time of the disaster											
Effective dose (mSy)	0-	-5	6-	10	11-	-15	16	-18	То	tal		
(IIISV)	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female		
<1	0	0	1	1	0	0	0	0	1	1		
1-1.9	0	0	2	1	1	0	0	0	3	1		
2-4.9	2	0	0	2	1	0	0	0	3	2		
5-9.9	0	0	0	0	0	0	0	0	0	0		
10-19.9	0	0	0	0	0	0	0	0	0	0		
≥20	0	0	0	0	0	0	0	0	0	0		
Total	2	0	3	4	2	0	0	0	7	4		

Table 7. A breakdown of dose estimates for participants of the Basic SurveyAs of 30 September 2019



Fig. 5 Effective dose of the participants

2.2-5 Blood and urinary iodine test results as of 30 September 2019

Table 8. Blood test	able 8. Blood test results											
	FT4 ¹⁾	FT3 2)	TSH 3)	Tg ⁴⁾	TgAb 5)	TPOAb 6)						
	(ng/dL)	(pg/mL)	(µIU/mL)	(ng/mL)	(IU/mL)	(IU/mL)						
Reference Range	0.95~1.74 7)	2.13~4.07 7)	0.340~3.880 ⁷⁾	≤33.7	<28.0	<16.0						
16 malignant or suspicious	$1.3 \pm 0.1 \ (0.0\%)$	$3.5\pm 0.5~(0.0\%)$	$1.3 \pm 0.5 \ (0.0\%)$	29.6± 67.6 (12.5%)	43.8%	37.5%						
Other 383	1.3 ± 0.3 (5.0%)	3.6 ± 1.0 (7.3%)	$1.2 \pm 0.9 \ (8.4\%)$	20.5±28.8 (11.2%)	5.0%	5.2%						

Table 8 Blood test results

FT4: free thyroxine; thyroid hormone binding 4 iodines; higher among patients with thyrotoxicosis (such as Graves' 1)disease) and lower with hypothyroidism (such as Hashimoto's thyroiditis).

FT3: free triiodothyronine; thyroid hormone binding 3 iodines; higher among patients with thyrotoxicosis (such as Graves' 2) disease) and lower with hypothyroidism (such as Hashimoto's thyroiditis).

TSH: thyroid-stimulating hormone; higher among patients with Hashimoto's disease and lower with Graves' disease. 3)

Tg: thyroglobulin; higher when thyroid tissue is destroyed or when neoplastic tissue produces thyroglobulin. 4)

5) TgAb: anti-thyroglobulin antibody; higher among patients with Hashimoto's disease and Graves' disease.

TPOAb: anti-thyroid peroxidase antibody; higher among patients with Hashimoto's disease or Graves' disease. 6)

Reference interval varies according to age. 7)

Cable 9 Urinary iodine test results(µg/day)											
	Minimum	25th percentile	Median	75th percentile	Maximum						
16 malignant or suspicious	54	132	211	487	1780						
Other 377	32	116	193	331	17200						

2.2-6 Confirmatory Examination results by area as of 30 September 2019

The proportions of participants with nodules diagnosed as malignant or suspicious for malignancy were 0.01% in 13 municipalities in the nationally-designated evacuation zones and Nakadori, and 0.00% in Hamadori and Aizu.

Table 10 Confirmatory examination results by area

Area	Number of Participants a	Participants who required confirmatory exam b	who Proportion who required Number who underwent confirmatory exam (%) Malignant or uspicious case b/a c		Malignant or uspicious cases c	Proportion of malignant or suspicious cases (%) c/a
13 municipalities ¹⁾	20,031	115	0.6	84	2	0.01
Nakadori ²⁾	99,664	580	0.6	350	14	0.01
Hamadori ³⁾	9,073	71	0.8	25	0	0.00
Aizu ⁴⁾	8,174	63	0.8	25	0	0.00
						I
Total	136,942	829	0.6	484	16	0.01

Tamura, Minami-soma, Date, Kawamata, Hirono, Naraha, Tomioka, Kawauchi, Okuma, Futaba, Namie, 1) Katsurao, Iitate

Fukushima, Koriyama, Shirakawa, Sukagawa, Nihonmatsu, Motomiya, Kori, Kunimi, Otama, Kagamiishi, 2) Tenei, Nishigo, Izumizaki, Nakajima, Yabuki, Tanagura, Yamatsuri, Hanawa, Samegawa, Ishikawa, Tamakawa, Hirata, Asakawa, Furudono, Miharu, Ono

3) Iwaki, Soma, Shinchi

4) Aizuwakamatsu, Kitakata, Shimogo, Hinoemata, Tadami, Minami-aizu, Kitashiobara, Nishiaizu, Bandai, Inawashiro, Aizubange, Yugawa, Yanaizu, Mishima, Kaneyama, Showa, Aizumisato

3. Mental Health Care

We provide the following support.

3.1 Support for the Primary Examination Participants

After the examination, medical doctors explain the results showing the ultrasound image in private consultation booths at the venue. As of 30 September 2019, 2,344 (100%) of 2,345 participants visited the consultation booths.

3.2 Briefing Sessions

To help participants or their parents improve their understanding of the thyroid examination, briefing sessions were carried out. Since April 2018, 811 people in 27 venues participated in the briefing sessions as of 30 September 2019. The cumulative total of participants is 14,834.

3.3 Support for the Confirmatory Examination Participants

We have set up a support team for participants of the confirmatory examination within Fukushima Medical University to address their anxiety and concerns, as well as online support for Q&A and counseling.

Since the start of Fourth-Round Survey, 312 participants (103 males and 209 females) have received support as of 30 September 2019. The number of supports provided was 611 in total. Of these, 312 (51.1%) received support at their first examination and 299 (48.9%) at subsequent examination.

For those who proceeded to regular insured medical care, we continue to provide support in cooperation with teams of medical staff at hospitals.

Thyroid ultrasound examination (TUE) coverage by municipality

As of 30 September 2019

	Survey population	Partici	pants	Proportion (%)	Number and proportion ^{*2} of participants by age group		ion ^{*2} of group	Participants living outside	Proportion (%)
			Outside					Fukushima	
	a	b	Fukushima	b/a	6-11	12-17	18-24	c*3	c/b
Municipalities su	irveyed in F	Y 2018							
Kawamata	1,832	1,123	25	61.3	470 41.9	575 51.2	<u>78</u> 6.9	39	3.5
Namie	2,858	1,208	287	42.3	473	571 47 3	164	333	27.6
Iitate	852	528	17	62.0	217	273	38	24	4.5
Minami-soma	10,201	5,677	788	55.7	2,404	2,836	437	841	14.8
Date	8,781	5,819	166	66.3	2,327	3,027	465	173	3.0
Tamura	5,435	3,360	65	61.8	1,497	1,620	243	75	2.2
Hirono	801	294	30	36.7	135	132	27	25	8.5
Naraha	1,094	267	46	24.4	104	125	38	51	19.1
Tomioka	2,340	679	178	29.0	233	330	114.2	193	28.4
Kawauchi	267	132	9	49.4	47	80	5	10	7.6
Okuma	2,020	611	195	30.2	247	272	92	203	33.2
Futaba	978	236	57	24.1	100	110	26	58	24.6
Katsurao	174	97	3	55.7	$\frac{-42.4}{36}$	51 52.6	11.0 10 10 3	3	3.1
Fukushima	43,238	28,332	1,676	65.5	11,645 41.1	14,216	2,471	1,671	5.9
Nihonmatsu	8,104	5,389	186	66.5	2,264	2,762	<u>363</u> 67	170	3.2
Motomiya	4,910	3,153	88	64.2	1,390	1,554 49.3	209	82	2.6
Otama	1,287	908	23	70.6	413	439	<u>56</u>	17	1.9
Koriyama	52,557	32,416	2,299	61.7	13,210 40.8	16,441 50.7	2,765	2,271	7.0
Kori	1,609	1,112	29	69.1	465	544	<u>103</u> 9 3	25	2.2
Kunimi	1,204	794	17	65.9	293 36.9	429	72	18	2.3
Tenei	839	506	7	60.3	216	255 50.4	35	7	1.4
Shirakawa	9,969	6,373	235	63.9	2,584	<u>3,263</u> 51.2	<u>526</u> 8.3	234	3.7
Nishigo	3,263	2,163	86	66.3	911 42.1	1,067 49.3	185	94	4.3
Izumizaki	1,025	657	4	64.1	274	<u>332</u> 50.5	<u>51</u> 7.8	4	0.6
Miharu	2,383	1,481	31	62.1	559 37.7	771	<u>151</u> 10.2	24	1.6
Subtotal	168,021	103,315	6,547	61.5	42,514 41.1	52,075 50.4	8,726 8.4	6,645	6.4

*1) The number of participants who received the examination at facilities outside Fukushima (as of 31 August 2019)

*2) The upper layer shows number of participants, and the lower layer shows the proportion of participants from each municipality.

*3) The number of participants who have resident registration outside of Fukushima.

• Age groups were formed based on the age at the Full-Scale Survey (the Fourth-Round Survey). This applies to other tables hereafter.

							As	of 30 Septer	nber 2019
	Survey population	Partic	ipants Outside	Proportion (%)	Number particij	and propor pants by age	tion ^{*2} of group	Participants living outside	Proportion (%)
	а	b	Fukushima ^{*1}	b/a	6-11	12-17	18-24	c ^{*3}	c/b
Municipalities su	rveved in F	Y 2019							
Iwoki	40,600	5 220	1 205	10.7	825	2,358	2,147	1 166	21.0
Iwaki	49,000	5,550	1,293	10.7	15.5	44.2	40.3	1,100	21.9
Sukagawa	12,378	5,900	180	47.7	34.4	53.0	12.6	162	2.7
Soma	5,507	3,092	187	56.1	<u>1,246</u> 40.3	1,606 51.9	240 7.8	198	6.4
Kagamiishi	2,133	963	26	45.1	477 49.5	<u> </u>	<u>114</u> 11.8	26	2.7
Shinchi	1,162	651	29	56.0	230 35.3	<u>363</u> 55.8	<u>58</u> 8.9	24	3.7
Nakajima	849	493	6	58.1	190 38.5	260 52.7	43 8.7	4	0.8
Yabuki	2,672	1,663	26	62.2	724	824 49.5	115 6.9	27	1.6
Ishikawa	2,182	1,313	19	60.2	531	670 51.0	112	18	1.4
Yamatsuri	816	459	7	56.3	210	229	20	6	1.3
Asakawa	1,064	634	13	59.6	236	346	52	13	2.1
Hirata	969	580	7	59.9	244	54.6 290	8.2 46	5	0.9
Tanagura	2.399	1.431	24	59.6	42.1	50.0	85	25	1.7
Hanawa	1 299	689	11	53.0	40.7	53.4 365	5.9	15	22
Samegawa	510	296	3	57.0	41.5	53.0 150	5.5 10	3	1.0
One	1 499	230	0	55.6	45.9 347	50.7 423	<u>3.4</u> 58	3	1.0
Ono	1,488	828	8	55.0	41.9	51.1 348	7.0	9	1.1
Tamakawa	1,052	643	3	61.1	39.0	54.1	6.8 47	3	0.5
Furudono	817	488	13	59.7	41.6	48.8	9.6	8	1.6
Hinoemata	87	29	1	33.3	55.2	41.4	3.4	0	0.0
Minami-aizu	2,128	1,000	14	47.0	461	491 49.1	48	11	1.1
Kaneyama	147	62	0	42.2	33.9	58.1	8.1	0	0.0
Showa	115	59	3	51.3	<u> </u>	27 45.8	<u> </u>	3	5.1
Mishima	148	67	0	45.3	28 41.8	37 55.2	2 3.0	0	0.0
Shimogo	747	340	4	45.5	<u>172</u> 50.6	156 45.9	<u>12</u> 3.5	4	1.2
Kitakata	6,947	296	45	4.3	<u>110</u> 37.2	<u>111</u> 37.5	75 25.3	39	13.2
Nishiaizu	761	274	5	36.0	148 54.0	105 38.3	21	5	1.8
Tadami	555	318	5	57.3	134 42.1	159 50.0	25 7.9	1	0.3
Inawashiro	2,070	963	21	46.5	475	441	47	19	2.0
Bandai	477	191	7	40.0	98	85	8	5	2.6
Kitashiobara	445	182	1	40.9	92	87	3	1	0.5
Aizumisato	2,823	1,290	23	45.7	563	614	113	21	1.6
Aizubange	2,402	1,028	31	42.8	43.0	454	<u> </u>	22	2.1
Yanaizu	464	227	1	48.9	47.3	44.2 106	<u>8.0</u> 15	1	0.4
Aizuwakamatsu	18.421	1.606	279	8.7	46.7	46.7	6.6 517	254	15.8
Yugawa	519	242	4	46.6	28.9 116	<u>38.9</u> 99	32.2	7	2.9
Subtotal	126 162	33 677	2 301	26.7	47.9 12,269	40.9 16,376	11.2 4,982	2 105	63
Juototai	120,102	55,027	2,501	20.7	36.5	48.7	14.8	2,103	0.5
Total	294,183	136,942	8,848	46.5	54,783 40.0	<u>68,451</u> 50.0	<u>13,708</u> 10.0	8,750	6.4

Prefecture	Number of medeical facilities	Participants *	Prefecture	Number of medeical facilities	Participants *	Prefecture	Number of medeical facilities	Participants *
Hokkaido	7	239	Fukui	1	15	Hiroshima	2	21
Aomori	2	112	Yamanashi	2	75	Yamaguchi	1	20
Iwate	3	230	Nagano	3	109	Tokushima	1	3
Miyagi	2	2,063	Gifu	1	22	Kagawa	1	23
Akita	1	144	Shizuoka	2	75	Ehime	1	10
Yamagata	3	436	Aichi	4	160	Kochi	1	10
Ibaraki	4	492	Mie	1	16	Fukuoka	3	64
Tochigi	8	554	Shiga	1	10	Saga	1	1
Gunma	2	142	Kyoto	3	71	Nagasaki	2	23
Saitama	3	459	Osaka	7	157	Kumamoto	1	23
Chiba	5	383	Hyogo	2	108	Oita	1	11
Tokyo	16	1,347	Nara	2	24	Miyazaki	1	19
Kanagawa	6	623	Wakayama	1	8	Kagoshima	1	5
Niigata	2	386	Tottori	1	7	Okinawa	1	34
Toyama	2	25	Shimane	1	11			
Ishikawa	1	35	Okayama	3	43	Total	120	8,848

Thyroid ultrasound examination (TUE) coverage outside Fukushima by prefecture

As of 31 August 2019

*The number of participants represents those who received examination at facilities outside Fukushima

Results of primary examination by municipality

As of 30 September 2019

		Confirmed		Number by	exam results				~	
	Participants	results		Proport	ion (%)		Nod	ules	Су	sts
	i ui tioipunto	Proportion		4			Proport	ion (%)	Proport	ion (%)
		(%)	Al	A2	В	С	≥5.1 mm	≤5.0 mm	≥20.1 mm	≤20.0 mm
	a 1 · 5	b/a (%)								
Municipalities su	rveyed in F	Y 2018	10 -			0				
Kawamata	1,123	1,120	407	709	4	0	4	2	0	713
	,	99.7	36.3	63.3	0.4	0.0	0.4	0.2	0.0	63.7
Namie	1,208	1,141	387	745	9	0	9	5	0	747
	· ·	94.5	33.9	65.3	0.8	0.0	0.8	0.4	0.0	65.5
Iitate	528	521	193	324	4	0	4	2	0	327
		98.7	37.0	62.2	0.8	0.0	0.8	0.4	0.0	62.8
Minami-soma	5,677	5,484	1,939	3,512	33	0	33	27	0	3,523
	,	96.6	35.4	64.0	0.6	0.0	0.6	0.5	0.0	64.2
Date	5.819	5,798	1,993	3,771	34	0	34	17	0	3,791
	-)	99.6	34.4	65.0	0.6	0.0	0.6	0.3	0.0	65.4
Tamura	3.360	3,283	1,217	2,047	19	0	19	10	0	2,054
	-,	97.7	37.1	62.4	0.6	0.0	0.6	0.3	0.0	62.6
Hirono	294	276	90	181	5	0	5	1	0	183
		93.9	32.6	65.6	1.8	0.0	1.8	0.4	0.0	66.3
Naraha	267	230	90	140	0	0	0	0	0	140
	207	86.1	39.1	60.9	0.0	0.0	0.0	0.0	0.0	60.9
Tomioka	679	630	233	394	3	0	3	0	0	395
Tomionu	017	92.8	37.0	62.5	0.5	0.0	0.5	0.0	0.0	62.7
Kawauchi	132	128	39	88	1	0	1	0	0	89
Trawadoni	152	97.0	30.5	68.8	0.8	0.0	0.8	0.0	0.0	69.5
Okuma	611	562	193	367	2	0	2	2	0	369
Okullia	011	92.0	34.3	65.3	0.4	0.0	0.4	0.4	0.0	65.7
Futaba	236	215	69	146	0	0	0	0	0	146
Tutaba	230	91.1	32.1	67.9	0.0	0.0	0.0	0.0	0.0	67.9
Katsurao	97	94	30	63	1	0	1	0	0	63
Katsurao)/	96.9	31.9	67.0	1.1	0.0	1.1	0.0	0.0	67.0
Fukushima	28 332	28,205	9,710	18,343	152	0	151	86	1	18,418
1 uKushima	20,332	99.6	34.4	65.0	0.5	0.0	0.5	0.3	0.0	65.3
Nihonmatsu	5 380	5,364	1,871	3,444	49	0	48	20	1	3,471
Innonnatsu	5,565	99.5	34.9	64.2	0.9	0.0	0.9	0.4	0.0	64.7
Motomiya	2 1 5 2	3,131	1,101	2,018	12	0	12	8	0	2,019
Wiotomiya	5,155	99.3	35.2	64.5	0.4	0.0	0.4	0.3	0.0	64.5
Otomo	900	906	301	599	6	0	6	2	0	602
Otalila	908	99.8	33.2	66.1	0.7	0.0	0.7	0.2	0.0	66.4
Koriyomo	32 416	31,829	10,491	21,150	188	0	187	104	1	21,248
Korryania	52,410	98.2	33.0	66.4	0.6	0.0	0.6	0.3	0.0	66.8
Kori	1 1 1 2	1,105	392	706	7	0	7	2	0	709
KUII	1,112	99.4	35.5	63.9	0.6	0.0	0.6	0.2	0.0	64.2
Kunimi	704	789	254	526	9	0	9	1	0	533
	/94	99.4	32.2	66.7	1.1	0.0	1.1	0.1	0.0	67.6
Tanai	506	461	174	285	2	0	2	2	0	287
Tener	500	91.1	37.7	61.8	0.4	0.0	0.4	0.4	0.0	62.3
C1	(272	6,298	2,186	4,074	38	0	38	23	0	4,093
Shirakawa	0,575	98.8	34.7	64.7	0.6	0.0	0.6	0.4	0.0	65.0
Nichie	2.172	2,136	718	1,407	11	0	11	9	0	1,412
INISHIgo	2,103	98.8	33.6	65.9	0.5	0.0	0.5	0.4	0.0	66.1
I	(634	236	396	2	0	2	2	0	398
TZUM1ZAK1	65/	96.5	37.2	62.5	0.3	0.0	0.3	0.3	0.0	62.8
MCI	1 401	1,463	494	959	10	0	10	5	0	965
Miharu	1,481	98.8	33.8	65.6	0.7	0.0	0.7	0.3	0.0	66.0
C 1. 1	100.015	101,803	34,808	66,394	601	0	598	330	3	66,695
Subtotal	103,315	98.5	34.2	65.2	0.6	0.0	0.6	0.3	0.0	65.5

		Confirmed		Number by	exam results						
	Participants	results b		Propor	tion (%)		Noo	lules	Су	sts	
	-	D (* (0())	ŀ	A	D	C	Propor	tion (%)	Propor	tion (%)	
	а	b/a (%)	A1	A2	в	U	≥5.1 mm	≤5.0 mm	≥20.1 mm	≤20.0 mm	
Municipalities sur	veyed in F	Y 2019									
Iwaki	5,330	2,974	1,068	1,864	42	0	42	22	0	1,882	
Sulrasaura	5 000	1,975	657	1,291	27	0.0	27	17	0.0	1,306	
Sukagawa	3,900	33.5	33.3	65.4	1.4	0.0	1.4	0.9	0.0	66.1	
Soma	3,092	63.4	33.7	65.0	1.4	0.0	1.4	0.5	0.0	65.9	
Kagamiishi	963	316	105	204	7	0	7	2	0	208	
	(1)	32.8	<u>33.2</u> 105	64.6	2.2	0.0	2.2	0.6	0.0	65.8	
Shinchi	651	50.5	31.9	67.5	0.6	0.0	0.6	0.6	0.0	68.1	
Nakajima	493	480	165 34.4	<u>312</u> 65.0	0.6	0.0	0.6	0.0	0.0	315	
Yabuki	1.663	1,524	556	961	7	0	7	6	0	965	
Tuouni	1,005	91.6	36.5	63.1 844	0.5	0.0	0.5	0.4	0.0	63.3	
Ishikawa	1,313	97.7	33.3	65.8	0.9	0.0	0.9	0.3	0.0	66.3	
Yamatsuri	459	457	145	312	0	0	0	2	0	312	
Agalaarra	624	622	200	415	7	0.0	0.0	3	0.0	416	
Asakawa	034	98.1	32.2	66.7	1.1	0.0	1.1	0.5	0.0	66.9	
Hirata	580	92.1	208	<u> </u>	0.2	0.0	0.2	0.2	0.0	<u> </u>	
Tanagura	1.431	1,416	518	888	10	0	10	7	0	896	
	-,	<u>99.0</u> 680	<u>36.6</u> 258	<u>62.7</u> 419	0.7	0.0	0.7	0.5	0.0	<u>63.3</u> 419	
Hanawa	689	98.7	37.9	61.6	0.4	0.0	0.4	0.3	0.0	61.6	
Samegawa	296	293	123	167	3	0	3	0	0	168	
Ono	878	758	236	516	6	0.0	6	1	0.0	521	
0110	020	91.5	31.1	68.1	0.8	0.0	0.8	0.1	0.0	68.7	
Tamakawa	643	88.2	38.3	60.5	1.2	0.0	1.2	0.2	0.0	61.0	
Furudono	488	475	185	289	1	0	1	2	0	288	
	-	97.3	38.9	60.8	0.2	0.0	0.2	0.4	0.0	<u>60.6</u> 18	
Hinoemata	29	96.6	35.7	64.3	0.0	0.0	0.0	0.0	0.0	64.3	
Minami-aizu	1,000	921	341	<u> </u>	0.8	0.0	0.8	0.2	0.0	<u> </u>	
Kaneyama	62	49	11	38	0	0	0	0	0	38	
		79.0 47	22.4	77.6	0.0	0.0	0.0	0.0	0.0	77.6	
Showa	59	79.7	23.4	76.6	0.0	0.0	0.0	0.0	0.0	76.6	
Mishima	67	<u>56</u> 83.6	14	42	0	0	0	0	0	42	
Shimogo	240	304	119	183	2	0.0	2	0.0	0.0	184	
Shiinogo	340	89.4	39.1	60.2	0.7	0.0	0.7	0.0	0.0	60.5	
Kitakata	296	83.4	36.0	61.9	2.0	0.0	2.0	0.8	0.0	62.3	
Nishiaizu	274	269	99	170	0	0	0	0	0	170	
	210	98.2	36.8 108	202	0.0	0.0	0.0	0.0	0.0	203	
l adami	318	97.8	34.7	65.0	0.3	0.0	0.3	0.0	0.0	65.3	
Inawashiro	963	<u>876</u> 91.0	312	<u> </u>	10	0.0	10	0.2	0.0	<u> </u>	
Bandai	191	175	45	128	2	0	2	1	0	129	
Dundui	171	91.6	25.7	73.1	1.1	0.0	1.1	0.6	0.0	73.7	
Kitashiobara	182	96.7	34.7	64.2	1.1	0.0	1.1	0.0	0.0	65.3	
Aizumisato	1,290	1,132	356	769	7	0	7	6	0	770	
Aimhanaa	1.029	928	288	633	7	0.0	7	2	0.0	639	
Alzubange	1,028	90.3	31.0	68.2	0.8	0.0	0.8	0.2	0.0	68.9	
Yanaizu	227	90.3	33.7	66.3	0.0	0.0	0.0	0.0	0.0	66.3	
Aizuwakamatsu	1,606	1,080	385	676	19	0	19	9	0	684	
		67.2 240	35.6	62.6	1.8	0.0	1.8	0.8	0.0	<u>63.3</u> 135	
Yugawa	242	99.2	43.8	55.8	0.4	0.0	0.4	0.4	0.0	56.3	
Subtotal	33,627	23,688	8,256	15,204 64 2	228	0	228	106	0	15,328 64 7	
	. <u>.</u>	105 401	42.044	01 500	000	0.0		426	0.0	00.000	
Total	136,942	91.6	45,064	<u>81,598</u> 65.0	<u>829</u> 0.7	0.0	826	436	0.0	<u>82,023</u> 65,4	

1 Thyroid ultrasound examination results by age and sex

As of 30 September 2019

Class/		<u>A</u> B				C		Total							
Sex		A1			A2						10181				
Ages	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
6-11	9,886	8,606	18,492	16,508	16,594	33,102	32	40	72	0	0	0	26,426	25,240	51,666
12-17	10,785	9,097	19,882	20,456	20,742	41,198	162	333	495	0	0	0	31,403	30,172	61,575
18-24	2,257	2,433	4,690	3,372	3,926	7,298	87	175	262	0	0	0	5,716	6,534	12,250
Total	22,928	20,136	43,064	40,336	41,262	81,598	281	548	829	0	0	0	63,545	61,946	125,491

Results by age group (Male)



Results by age group (Female)



2 Nodule characteristics

As	of 30	September	2019
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Nodule size	Total			Class	Proportion
Nodule Size	Total	Male Female		Class	Гороннов
None	124,229	63,112	61,117	A1	99.0%
\leq 3.0 mm	48	22	26	12	0.20/
3.1-5.0 mm	388	130	258	AZ	0.570
5.1-10.0 mm	545	187	358		
10.1-15.0 mm	172	67	105		1
15.1-20.0 mm	63	18	45	В	0.7%
20.1-25.0 mm	24	6	18		
≥ 25.1 mm	22	3	19		
Total	125,491	63,545	61,946		



□No nodule

□Nodule≤5.0mm □Nodule≥5.1mm



3 Cyst characteristics

Cyst size	Tatal			Class	Proportion	
	Total	Male	Female	Class		
None	43,465	23,077	20,388	A1	75 20/	
\leq 3.0 mm	50,965	26,668	24,297		/3.270	
3.1-5.0 mm	27,476	12,491	14,985		24.7%	
5.1-10.0 mm	3,520	1,289	2,231	A2		
10.1-15.0 mm	55	19	36			
15.1-20.0 mm	7	1	6			
20.1-25.0 mm	3	0	3	р	0.0020/	
≥25.1 mm	0	0	0	В	0.002%	
Total	125,491	63,545	61,946			





Results of confir	matory exam			As of	30 Septen	nber 2019					
	-	who required	Number of the	Number of those who underwent confirmatory exam				Number of confirmed results			
	Participants	confirmatory exam	Total	Ages	Ages	≥ 18				Not Al	l or A2
Area				0-11	12-17	0	Total	Al	A2		FNAC
	a	b	с	d	е	t	h	1	J	k	
		Proportion (%)	Proportion (%)	Proportion (%)	Proportion (%)	Proportion (%)	Proportion (%)	Proportion (%)	Proportion (%)	Proportion (%)	Proportion (%)
		b/a	c/b	d/c	e/c	f/c	h/c	i/h	j/h	k/h	l/k
12	20.031	115	84	7	58	19	82	1	1	80	5
13 municipanties	20,031	0.6	73.0	8.3	69.0	22.6	97.6	1.2	1.2	97.6	6.3
Nalas dani ²⁾	99,664	580	350	36	211	103	307	1	34	272	24
INAKAGOIT		0.6	60.3	10.3	60.3	29.4	87.7	0.3	11.1	88.6	8.8
II	0.073	71	25	1	3	21	17	0	0	17	0
Hamadon	9,073	0.8	35.2	4.0	12.0	84.0	68.0	0.0	0.0	100.0	0.0
A : 4)	9 1 7 4	63	25	5	12	8	12	0	1	11	0
Alzu	0,174	0.8	39.7	20.0	48.0	32.0	48.0	0.0	8.3	91.7	0.0
Total	136 942	829	484	49	284	151	418	2	36	380	29
Total	130,942	0.6	58.4	10.1	58.7	31.2	86.4	0.5	8.6	90.9	7.6

Results of confirmatory examination coverage by area

1) Tamura, Minami-soma, Date, Kawamata, Hirono, Naraha, Tomioka, Kawauchi, Okuma, Futaba, Namie, Katsurao, Iitate

2) Fukushima, Koriyama, Shirakawa, Sukagawa, Nihonmatsu, Motomiya, Kori, Kunimi, Otama, Kagamiishi, Tenei, Nishigo, Izumizaki, Nakajima, Yabuki, Tanagura, Yamatsuri, Hanawa, Samegawa, Ishikawa, Tamakawa, Hirata, Asakawa, Furudono, Miharu, Ono

3) Iwaki, Soma, Shinchi

4) Aizuwakamatsu, Kitakata, Shimogo, Hinoemata, Tadami, Minami-aizu, Kitashiobara, Nishiaizu, Bandai, Inawashiro, Aizubange, Yugawa, Yanaizu, Mishima, Kaneyama, Showa, Aizumisato

Appendix 6

Surgical cases for malignancy or suspicion of malignancy

1. Municipalities surveyed in FY 2018	
Malignant or suspicious for malignancy:	15 (8 surgical cases: 8 papillary thyroid carcinomas)
2. Municipalities surveyed in FY 2019	
Malignant or suspicious for malignancy:	1 (0 surgical case: 0 papillary thyroid carcinomas)
3. Total	
Malignant or suspicious for malignancy:	16 (8 surgical cases: 8 papillary thyroid carcinomas)
 Malignant or suspicious for malignancy: 2. Municipalities surveyed in FY 2019 Malignant or suspicious for malignancy: 3. Total Malignant or suspicious for malignancy: 	 15 (8 surgical cases: 8 papillary thyroid carcinomas) 1 (0 surgical case: 0 papillary thyroid carcinomas) 16 (8 surgical cases: 8 papillary thyroid carcinomas)

Report on the Thyroid Survey for Age 25

1. Summary

1.1 Survey Population

Among Fukushima residents 18 years old or younger at the time of disaster (born between 2 April 1992 and 1 April 2012), those who turn 25 years old in each fiscal year, including those who moved of the prefecture, are invited to receive a thyroid ultrasound examination (TUE).

This report includes the status of the following groups:

- Those who were born between 2 April 1992 and 1 April 1993
- Those who were born between 2 April 1993 and 1 April 1994

1.2 Implementation Period

The Thyroid Survey for Age 25 (hereinafter "Age 25 Survey") started in FY2017. If participants fail to receive TUE in the year they turn 25, they are entitled for TUE until the fiscal year prior to the year they turn 30 (see Fig. 1 for the implementation schedule of Age 25 Survey).

Year of examination	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	1 //
Birth Year of examinee	Age							
FY1992	25★	26	27	28	29	30★	31	
FY1993	24	25★	26	27	28	29	30★	
FY1994	23	24	25★	26	27	28	29	
FY1995	22	23	24	25★	26	27	28	

Eligible residents are invited to take examination every 5 years and can take one by the year before their next examination.

Beginning from FY2017, examinations are offered to Fukushima residents and ex-residents who turn age 25 in each fiscal year.
Notifications for the examination will be sent to 25-year-old residents in the fiscal year marked with ★.

Fig. 1 Implementation schedule for Age 25 Survey

2. Summarized Results of Age 25 Survey (as of 30 September 2019)

2.1 Results of the Primary Examination

2.1-1 Progress report

The primary examination for Age 25 Survey started in May 2017 for those who turned 25 years old in FY2017 (those born in FY1992 and FY1993) and 4,277 (9.6%) people participated.

Results of 4,239 (99.1%) participants have been confirmed and results reports were sent to them accordingly. Of these, 1,839 were classified as A1 (43.4%), 2,202 as A2(51.9%), 198 (4.7%) as B, and none as C.

Table 1. Progress and	Fable 1. Progress and results of the primary examinationAs of 30 September 2019											
	Participants			Exam results								
	population	Proportion (%)	Outside	Proportion (%)	Class (%)							
			Fukushima			Α	Requiring confirmatory exam					
	a	b (b/a)	Fukusiiiina	c (c/b)	A1 d (d/c)	A1 d (d/c) A2 e (e/c)		C g (g/c)				
Born in FY1992	22,653	2,234 (9.9)	709	2,230 (99.8)	929 (41.7)	1,203 (53.9)	98 (4.4)	0 (0.0)				
Born in FY1993	21,889	2,043 (9.3)	721	2,009 (98.3)	910 (45.3)	999 (49.7)	100 (5.0)	0 (0.0)				
Total	44,542	4,277 (9.6)	1,430	4,239 (99.1)	1,839 (43.4)	2,202 (51.9)	198 (4.7)	0 (0.0)				

Table 2. Number and proportion of participants with nodules/cysts As of 30 September 2019

	Number of	Number and proportion of participants with nodules/cysts								
	participants with	Nod	lules	Cysts						
	confirmed results	$\geq 5.1 \text{ mm}$	≤5.0 mm	$\geq 20.1 \text{ mm}$	≤20.0 mm					
	a	D (D/A)	c (c/a)	a (d/a)	e (e/a)					
Born in FY1992	2,230	97 (4.3)	46 (2.1)	1 (0.0)	1,248 (56.0)					
Born in FY1993	2,009	100 (5.0)	35 (1.7)	⁰ (0.0)	1,043 (51.9)					
Total	4,239	197 (4.6)	81 (1.9)	1 (0.0)	2,291 (54.0)					

• Proportions are rounded to the tenths digit. This will apply to other tables.

• The number of survey population and number of actual participants will be presented by fiscal year in this and future reports.

2.1-2 Comparison with the previous examination results

The comparison of the results of Age 25 Survey and the previous surveys is shown in Table 3. Among 2,788 participants who were diagnosed as A (A1 or A2) in the previous survey, 2,724 (97.7%) were diagnosed as A (A1 or A2), and 64 (2.3%) as B in Age 25 Survey.

Among 102 participants who were diagnosed as B in the previous survey, 33 (32.4%) were diagnosed as A (A1 or A2), and 69 (67.6%) as B in Age 25 Survey.

Table 3 Comparison with the previous survey results

As of 30 September 2019

		Results of the previous	Results of the Age 25 Survey ^{*2}							
			survey *1	I	A					
				A1 b	A2 c	\mathbf{B} d	C e			
			а	b/a (%)	c/a (%)	d/a (%)	e/a (%)			
		A 1	1,385	1,127	245	13	0			
		AI	(100.0)	(81.4)	(17.7)	(0.9)	(0.0)			
	A	۸2	1,994	317	1,610	67	0			
		AZ	(100.0)	(15.9)	(80.7)	(3.4)	(0.0)			
Results of the		D	115	4	31	80	0			
survey		D	(100.0)	(3.5)	(27.0)	(69.6)	(0.0)			
5		C	0	0	0	0	0			
		C	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)			
	No	norticipation	1,740	780	876	84	0			
	INO	participation	(100.0)	(44.8)	(50.3)	(4.8)	(0.0)			
,	Tatal		5,234	2,228	2,762	244	0			
Total		(100.0)	(42.6)	(52.8)	(4.7)	(0.0)				

*1 Upper figures show a previous diagnosis for the participants in this (the Age 25) survey whose results have been confirmed.

*2 Upper figures show the breakdown of the Age 25 Survey participants who were diagnosed for each diagnostic class in the previous Survey. Lower figures are their proportion (%).

2.2 Results of the Confirmatory Examination

2.2-1 Progress report

Out of 198 eligible people, 145 (73.2%) participated, of whom 127 (87.6%) completed the whole procedure of the examination.

Of the foregoing 127 participants, 7 (A2 equivalent: 7) (5.5%) were confirmed to meet A1 or A2 diagnostic criteria by the Primary Examination standards (including those with thyroid diseases). The remaining 120 (94.5%) participants were confirmed to be non-equivalent to A1 or A2.

	Number of those requiring	Participants	Confirmed exam results							
	confirmatory exam	Proportion (%)	Confirmatory exam coverage (%)	A1	A2	Not A1 or A2				
	а	b (b/a)	c (c/b)	d (d/c)	e (e/c)	f (f/c)	FNAC g (g/f)			
Born in FY1992	98	81 (82.7)	78 (96.3)	0 (0.0)	3 (3.8)	75 (96.2)	8 (10.7)			
Born in FY1993	102	84 (82.4)	80 (95.2)	0 (0.0)	7 (8.8)	73 (91.3)	5 (6.8)			
Born in FY1994	44	3 (6.8)	2 (66.7)	1 (50.0)	0 (0.0)	1 (50.0)	0 (0.0)			
Total	244	168 (68.9)	160 (95.2)	1 (0.6)	10 (6.3)	149 (93.1)	13 (8.7)			

Table 4. Progress and results of the confirmatory examination

2.2-2 Results of fine needle aspiration cytology (FNAC)

Among those who underwent FNAC, 4 were diagnosed as having malignant or suspicious-for-malignancy nodules: 2 males and 2 females. Participants' age at the time of the confirmatory examination ranged from 24 to 25 years (mean age: 24.8 ± 0.5 years). The minimum and maximum tumor diameters were 12.3 mm and 18.0 mm. Mean tumor diameter was14.5 ± 2.7 mm.

In the previous survey, 1 of these 4 participants had A2 and 3 had not participated.

Table	5.	Results	of FNAC
10010	~ •	10000100	0111110

Among those who underwent Age 25 Survey:	
 Malignant or suspicious for malignancy : 	4 ^{*)}
• Male to female ratio :	2:2
• Mean age (SD, min-max):	24.8 (0.5, 24-27), 17.0 (0.8, 16-18) at the time of disaster
Mean tumor size:	14.5 mm (2.7 mm, 12.3-18.0 mm)

*) Surgical cases are as shown in Appendix 2.

3 Mental Health Care

3.1 Support for Primary Examination Participants

Since April 2017, we offer person-to-person explanations to participants at public venues where primary examinations take place. After the examination, medical doctors explain the results, showing the ultrasound image in private consultation booths at the venue. As of 30 September 2019, 362 (99.7%) of 363 participants visited the consultation booths.

3.2 Support for Confirmatory Examination Participants

For participants of the confirmatory examination, a support team was set up within Fukushima Medical University to address their anxiety and concerns, as well as online support for Q&A and counseling.

Since the start of Age 25 Survey, 54 participants have received support as of 30 September 2019, including 14 males and 40 females. Support was provided to 110 in total. Of these, 54 (49.1%) received support at their first examination and 56 (50.9%) at subsequent examinations.

For those who have proceeded to the health insurance medical care, we continue to provide support in cooperation with the teams of medical staff at hospitals.

1 Thyroid ultrasound examination results by sex

As of 30 September 2019

Class/			1	4				в		C			Total			
Jex Jex		A1			A2			D			Č			Total		
Survey Population	Male	Female	Total	Male	Female	Total										
Born in FY1992	345	584	929	380	823	1,203	18	80	98	0	0	0	743	1,487	2,230	
Born in FY1993	322	588	910	340	659	999	19	81	100	0	0	0	681	1,328	2,009	
Total	667	1,172	1,839	720	1,482	2,202	37	161	198	0	0	0	1,424	2,815	4,239	

Results by age group (Male)



Results by age group (Female)



2 Nodule characteristics

Nodule size	Total			Class	Proportion
		Male	Female	Class	
None	3,961	1,370	2,591	A1	93.4%
~3.0mm	7	0	7	A2	1.9%
3.1~5.0mm	74	17	57		
5.1~10.0mm	112	22	90	В	4.6%
10.1~15.0mm	49	10	39		
15.1~20.0mm	20	2	18		
20.1~25.0mm	7	2	5		
25.1mm~	9	1	8		
Total	4,239	1,424	2,815		





3 Cyst characteristics

Cyst size	Total			Class	Proportion
		Male	Female	Class	
None	1,947	694	1,253	A1	71.5%
\sim 3.0mm	1,083	373	710	A2	
3.1~5.0mm	834	259	575		28.5%
5.1~10.0mm	352	93	259		
10.1~15.0mm	21	4	17		
15.1~20.0mm	1	1	0		
20.1~25.0mm	1	0	1	В	0.02%
25.1mm~	0	0	0		
Total	4,239	1,424	2,815		





Surgical cases for malignancy or suspicion of malignancy

Among those who underwent Thyroid Survey for Age 25:

• Malignant or suspicious for malignancy:4 (1 surgical cases: 1 papillary thyroid carcinomas)